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Eight major findings are the result of an exploratory investigation into how students evaluate residence-hall environments and how they behave in them. Students report their own time allocation, space usage, study patterns, and need fulfillment. References and appendices include a sample questionnaire and improvements on residence hall facilities suggested by students. (JS)

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RESIDENCE HALL ENVIRONMENT

A COMPARATIVE STUDY IN ARCHITECTURAL PSYCHOLOGY

VICTOR HSIA

UNIVERSITY OF UTAH

EF 002161

RESIDENCE HALL ENVIRONMENT
-- AN ARCHITECTURAL PSYCHOLOGY COMPARATIVE STUDY
AT THE UNIVERSITY OF UTAH

by

Victor Wei-teh Hsia

A thesis submitted to the faculty of the University
of Utah in partial fulfillment of the requirements
for the degree of

Master of Science

Department of Psychology

University of Utah
May 1968

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ABSTRACT

This has been an exploratory investigation into how students evaluate three residence-hall environments and behave in them. Two hundred eighty-eight residents of the three co-educational residence halls at the University of Utah completed a 69-item questionnaire evaluating 24 physical elements of the residence halls and reporting their own time allocation, space usage, study patterns, and need-fulfillment. Critical areas in residence halls affecting the well-being of students were disclosed and analyzed. Improvements to these problems as well as further research in residence-hall environment were suggested.

Major findings are as follows:

1. Students in different areas of each hall gave similar ratings to the physical elements of the hall, but students in different halls gave significantly different ratings to them.

2. Men and women tended to rate physical elements in similar patterns. However, men usually gave lower ratings than women. Women were more critical toward their bedroom surroundings, i.e., closet space, lighting, bathroom, bedroom size, and soundproofing.

3. The combined rating scores of 24 physical elements in each residence hall corresponded with the preferences reported by students. Most preferred residence was the hall students were residing in. Off-campus living was the second choice and seemed to be the direction most students were hoping to move.

4. Each of the three halls had its own successful and unsuccessful physical elements, as rated by students. The most highly-rated element in all halls was the abundance of window area in one of the halls. Five of the lowest-rated elements were soundproofing, heating, closet space, recreation room, and food service.

5. Three-fourth of the students' 24-hour day was spent within the residence-hall environment. The most used space was the bedroom, in which the student spent 12.5 hours per day. Men spent 1.9 hours more per day in their rooms than women. Students who shared rooms with another student spent 1.2 hours more per day in their rooms than those who lived alone.

6. A mean of 25.9 hours of the total weekly study time per student was reported. Of this study time, 74 percent was done in the students' rooms. Students in all three halls spent about the same amount of time studying in their rooms; they differed in the amount of study time spent elsewhere.

7. Several conclusions could be drawn from students' statements of preferred spaces in which to engage in particular activities. When a student wanted to be alone (outside his own room), he preferred either the floor lounge or the hallway (corridor). To find exciting and interesting things to do, students chose places other than residence halls; their own rooms were the last choice.

8. The extent to which a residence hall lived up to the expectations of its students corresponded with the combined rating scores students gave to the physical elements of the halls.

9. Of the four major needs of students (academic, social, personal, and recreational), students considered that living in residence halls was most helpful in fulfilling social needs and least helpful for academic needs.

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A college is people, ideas, and a place--and in that order. A college aspiring to completeness in all things will somehow find a way to cast up a physical environment that supports and sustains its mission.

Harold B. Gores
in A Window to the Future
1964, Stanford University

CHAPTER I

INTRODUCTION

Man's imagination and ingenuity have enabled him to shape his environment; however, the effects of this environment have remained essentially unexplored. Behavioral scientists, although prolific in other areas of research, have done little systematic investigation of the effects of man-made environment on man's behavior. A paradox seems to exist in the efforts of behavioral scientists. Wohlwill (1966) wrote:

> Psychologists never tire to point out the importance of stimulus factors as a determinant of behavior, and of the role of environmental influences on behavior...yet, as a group they have relatively little to say on the important problems relating to man's response to his physical environment.....The time would thus seem most auspicious for experimental psychologists to take their place alongside their colleagues in social psychology, sociology, geography, architecture, planning, etc., in a broadside attack on the problems facing us in improving the quality of our environment (pp. 28, 37).

The merging of these co-operating efforts into the main stream of behavioral research is to the "mutual strengthening of that goal of history--the future" (Watson, 1963, p. 495).

In preparing the future generation, a vital role is played by the universities and, increasingly, by student housing. The Educational Facilities Laboratories (1964) reported that by 1970, as many as 40 percent of the seven million college students will have to be housed on campuses across the United States.

> For each of several recent years, colleges and universities have allocated over 30 percent of their capital outlay dollars to the construction and renovation of student housing projects...Housing projects are used to promote student living and learning, the impact on higher education in this country will be tremendous (Riker, 1965, p. v).

Few can doubt the impact of campus living on students and the importance of providing a residence hall environment which enhances the development and comfort of students. However, almost no studies have been done to show how these "castles of students" affect their residents. An appraisal of architectural environment in terms of how it fulfills the needs of the students is important and necessary.

This study attempts to investigate the relationships between the functioning of the resident students and the architectural environment of residence halls at the University of Utah. The major purposes of the study are:

1. To identify the architectural elements in each residence hall which are liked or disliked by students.
2. To learn how students use their time and various spaces in the residence halls, and how their major needs are fulfilled by living in the residence halls.
3. To formulate some guidelines for designing residence halls.

Historical Development of Student Housing

Fragments of written records reveal a few occasions in ancient times when students lived in learning centers. Five hundred years before Christ, the Chinese philosopher, Confucius, is reported to have had as many as 3,000 pupils studying with him at a time. Many of them lived in his house and took up daily chores to maintain the house

(Eastman, 1964). A hundred years later in Greece, during the fifth century B.C., a number of medical schools developed. The most famous school was located on the island of Cos, where Hippocrates had studied (Watson, 1963). When Plato founded his Academy in 387 B.C., a society of scholars and students came to live in Athens. Some students remained at the Academy only a short time, but many remained for the greater part of their lives, devoting themselves to the advancement of knowledge (Watson, 1963). There were undoubtedly many problems of student housing in these ancient learning centers, but little is known to us.

The earliest recorded problem of student housing dated back to the beginnings of the great European universities in the twelfth and thirteenth centuries. As students came in great numbers to centers where famous masters and books were available, such as Paris, Bologna, and Oxford, problems mushroomed for the townspeople and the students (Stewart, 1942). According to most accounts, these students were decidedly youthful. Rashdall (1936) reported those at Paris were from 13 to 16 years of age. Morison (1936) mentioned that "it seems probable that in every medieval university the bachelor's degree was normally taken between the ages of fifteen and nineteen" (p. 25). The wealthy students brought servants and set up independent and comfortable establishments, while others usually banded together and set up what today would be called cooperative houses. At Bologna, students "lived in their own houses and entirely after their own fashion. The usual practice was...for parties of students (socii) to hire the whole house together and make their own arrangements as to servants, furniture, and the like" (Rashdall, 1936, p. 193).

Schachner (1938) noted that at first the universities undertook no supervision over the private lives of their students beyond seeing to it "that they were not cheated by unscrupulous citizens or injured in the numerous broils of the day" (p. 140). Many students, according to Stewart (1942), "deserted their studies for the pleasures of life in Paris. The more serious ones established houses, as at Bologna, arranging with a Bachelor or a Master to take care of financial arrangements and to control to a certain extent the activities of the group." Such a community residence was called a hospicium at Paris, and a hall at Oxford. By the middle of the thirteenth century, according to Schachner, "the majority of middle class students resided in such Halls, and the self-governing democracy was a thing of the past. The Masters or Principals in charge had evolved their own ironclad rules for their charges" (p. 141).

As described by Stewart (1942), dramatic changes developed thereafter until the time of the early American colleges.

> Many colleges were at first merely endowed Halls which were financed by charitable individuals who left funds for the provision of board, lodging, and apparel for poor students. Since the masters of these establishments were paid not by students but by the foundations, their authority over their student residents was greater than in the voluntary groups. Gradually, the Colleges began to accept paying scholars, and by the Fifteenth Century, payment by the members of the College or Hospicium was something required.
>
> Up until 1650, the impact of discoveries following upon the explorations of Copernicus and Galileo into the realm of science, and those of Columbus, Cortez, and their followers into the unknown regions of the terrestial globe expanded the available studies and the spirit of the university life. The Reformation largely cancelled these gains. In the strict religious alignment which it precipitated, the universities reverted to conservatism. And in Germany, residence halls were abandoned for the boarding house

> system, which has remained the customary collegiate housing of that country.
>
> In France, despite the weakening of the universities by the bickerings between the Jesuits and the Huguenots, residence halls maintained themselves until the Revolution closed all educational institutions. At Oxford and at Cambridge, although each College was completely and militantly Catholic or Protestant, the residence system survived and furnished the pattern for the first American colleges (p. 7).

Thus two philosophies about student housing developed, and they are still with us, with adherents divided on how best to serve the needs of the students. Bush-Brown (1957) wrote:

> There are still those who believe that the university should offer only intellectual education, permitting students to live in fraternities, apartments, rented rooms, or wherever they may wish. There are others who believe equally strongly that a college or university is responsible for the total training of an individual, including social and personal education, and must provide a residential system.....No dormitories were built at M.I.T. or the Johns Hopkins,.... Harvard saw no additional dormitories built for undergraduates during a large period of Eliot's long presidency between 1871 and 1909.
>
> This important detour from the older English collegiate practice was made at universities where educators emulated German and other continental universities. In Germany, universities provided only lecture halls, libraries, laboratories and a main hall suitable for holding ceremonies. Students attending a German university obtained their own lodging and board.... Many remnants of the system are still visible, particularly at urban universities, such as New York University, and graduate schools, such as that at Michigan, as well as in technological institutes, such as M.I.T., which has not yet fully converted to the residential system for undergraduates.
>
> Aligned against all their arguments are those educators who believe that higher education should continue the English collegiate tradition of being concerned with educating the whole man. They conceive that the primary objective of the residential system is to assist the institution in providing a better educational program; housing students is a secondary aim. American history is full of eminent men who supported this belief: all the early college educators, Jefferson,

> McCosh, Porter, Abbot Lawrence Lowell who developed the brilliant scheme for the Houses at Harvard, Woodrow Wilson and Andrew Fleming West who together helped shape the residential pattern at Princeton, and Compton and Killian who were instrumental in modifying the pattern for ust at M.I.T. (p. 177).

Research Literature on Student Housing

Most of the literature on student housing comes from the educational publications; few articles are found in psychology journals. Photographs and drawings of new dormitories were frequently presented in architectural publications, but only one systematic environmental evaluation has been reported. The time-worn maxim, "A picture is worth a thousand words," does not apply in the case of environmental research. Several recent writings by architects and allied professionals do, however, provide insights regarding student housing.

The aspects of student housing most frequently mentioned in research literature are related to academic efforts of student residents, such as study time, study habits, grades, etc.

Study time. In comprehensive investigation of the study habits of American college students, Stoke (1960) reported that between 55 and 78 percent of all studying took place in the student's room. Sommer and Peterson (1966) reported that 80 percent of the studying was done in the student's own residence, as shown by diaries of students. In a survey of California junior college students, their study diaries also showed that close to 80 percent of studying was done in the student's room (Sommer, 1966). Bailey (1958), in a survey of nine campuses in Wisconsin, found that the median study hours was 20 hours per week for 984 girls living in dormitories. At the University of Utah, a survey by the writer (Appendix V) found that an average of 57 percent of studying time was spent in dormitory rooms, and that men tended to spend larger percentage of studying time in their rooms (62 percent) than women (49 percent). Findings from the University of California showed that in double rooms, both students are seldom studying together or at the same time (Van der Ryn, 1965). It was also found that the schedules of students varied considerably; the so-called ideal schedule is "a misleading and potentially destructive way to organize and structure the dormitory community" (p. 52).

Study habits. In a study of social facilitation and study habits, Zajone (1965) reported that the most efficient studying is done alone, but to get the best results in examinations, one should take them while in the company of many others taking the same examination. Stoke (1960) concluded that the main characteristics of good study space should be a place which: (1) allows one to study alone, or if possible, with one or two other students; (2) is exclusively for study--at least at the time; (3) is free from distraction of movement and noise caused by others; (4) is free from distractions of noice from physical sources, e.g., telephones, plumbing, heating, typewriter, etc.; (5) is adequately lighted; (6) is equipped with personal control of temperature and ventilation; (7) is easily accessible to books and other study material; (8) is equipped with comfortable chair, adequate desk space and bookshelves; (9) allows one to relax, wear "easy" clothes, etc.; and (10) has decor and furnishings which are plain but not ugly, definitely not plush or arty. At Berkeley, A Citizens Advisory Committee on Student Housing appointed by the City Council reported that "quiet study conditions" is one of the most frequently-mentioned accommodations preferred by students. A study among dissatisfied students who moved out of dormitories found that 67 percent of these students gave "desire for better study conditions" as their reason (Van der Ryn, 1965).

Grades. Matson (1963) reported that the best atmosphere for academic achievement is found in the residence hall environment and the fraternities with average or better than average reputation. Off-campus living and fraternities with low prestige appeared to influence academic achievement negatively. The drop-out rates for those living in the residence halls or off-campus, however, seemed to be much higher than those for fraternity groups. Between coed and non-coed dormitories, Greenleaf (1962) found no differences in grade point averages over a three year period. In a study of the educational influence of dormitory roommates, Hall and Willerman (1963) found a relationship between the effects mediated by birth ordinal position of roommate and grade point average; that is, first-born children tended to get better grades when sharing courses with their roommates of higher ability.

Student personality. The student subcultures on the American college campus are defined in four representative groups as "academic," "collegiate," "non-conformist," and "vocational" (Clark & Trow, 1964). The dormitory serves the needs of the collegiate and vocationally-oriented students better than the needs of the non-conformist or academically oriented student (Van der Ryn, 1965). After using the Minnesota Multiphasic Personality Inventory in a study of disciplinary behavior of dormitory students, Clark (1964) reported that (1) large numbers of men in the troubled sections of a dormitory had high MMPI scores on the exciter scales 4, 8, or 9 (Psychopathic deviate, Schizophrenic, and Hypomania), whereas (2) a large number of men in the non-troubled sections had higher scores on scales 0, 2, or 5 (Social introversion, Depression, and Masculinity-Feminity).

Roommate interaction. The initial interpersonal explorations among college students living together are completed within 5-6 weeks (Newcomb, 1956). Bailey (1958) reported that among 984 dormitory girls, 94 percent maintained that they "get along very well with their roommates"; only 0.5 percent of them "want out." on the other hand, Van der Ryn (1965) reported "Clashes between incompatible roommates appear commonplace, and probably affect a student's approach to his work....Over half of the students we interviewed simply told us, 'I can't stand my roommate'....Both students seldom are studying together in the room at the same time" (p. 8). He suggested that there are certain amounts of avoidance between roommates, and one roommate is often forced out of the room whenever the other is in the room. Hall and Willerman (1965) found that among male students, first-borns are more susceptible to the influence of others and second-borns are more likely to influence others. In an attempt to devise a method to predict roommate compatibilities, Broxton (1962) found that the significant factors for compatibility are average church attendance, size of high school graduating classes, study habits, sleeping habits, and father's education and his annual salary.

Student reaction. Bailey (1958) reported that the things women students liked the most in dormitory life are companionship and convenience, respectively reported by 80 and 12 percent of the students. The most common irritation for the women students is noise, which was reported by 72 percent of the students. In a survey at Cornell University (1963), women students voiced their opinion on dormitory planning as follows: (1) avoid the "institutional look, e.g., the long corridors, large common rooms, rows and rows of rooms; (2) design for small groups in a large dormitory population; and (3) provide a sense of intimacy in the interior of the building, so students can be themselves, feel at home, etc. Sommer (1966) reported that there is a generally satisfactory reaction among students toward "an atmosphere of perceived friendliness, good morale, and sociability in Regan Hall (at the University of California's Davis campus)." On the other hand, Fairchild (1961) suggested that the vernacular students used to describe their residence halls could be indicative of their morale, e.g., "The Barracks," "The Cage," "Snob Hill," "Phenomena Gulch," and "Rat's Nest." Van der Ryn (1965) reported that students have three major complaints about their rooms: (1) complaints due to conflicts with other students, e.g., unwanted or untimely interruptions, lack of privacy and solitude, insecure feelings about the safety of their possessions, etc.; (2) complaints due to inflexibility inherent in the room design, which prevents the students from altering parts of the room to suit their own needs and fancy; and (3) complaints of not being able to exercise their rights of possession. The American Institute of Architects (1956) sponsored a survey of College Housing which revealed that college women consider the lack of a floor lounge in dormitories the most serious defect. They wanted a place for "members only," or for non-daters who do not want to be seen alone in the large common room.

Activity. Williamson, Layton, and Smoke (1954) reported that heavy participation in activities is an undergraduate phenomenon, which gradually narrows as the students advance and mature in college. The implications were that for various classes of students, different social programs must be planned. Greenleaf (1962) concluded that the most important function of residence halls is that of helping students make constructive use of their time. Students spend from 70 to 80 percent of their time in dormitories (Stoke, 1960). Van der Ryn (1965) reported that at the University of California dormitories, students spend one-third of their waking hours in their own rooms. The effective use of students' time within the dormitory seems to be of primary importance.

Freshman dormitories. As "wide-eyed" newcomers to college life, freshmen tend to create problems everywhere they go. The foremost concern of most new students is assimilation into the student society, which has values and beliefs passed on from one "generation" of students to another (Freedman, 1956). This assimilation or adjustment process is one of the most critical transitional phases of a student's life. It is certainly not an easy time and often can be a painful experience. Freshmen, as a group, have the highest drop-out rate of all students. According to a United States Office of Education survey, 27 percent do not complete their first year and an additional 28 percent leave during the next three years (Riker, 1961). Morales (1965) observed that freshmen make the most noise and "many of them let out their frustration of college adjustment by kicking at doors, pounding on walls, or screaming at the top of their voices" (p. 20).

Partially because of these special problems, many colleges place freshmen in separate dormitories. Fairchild (1961) reported a study at Syracuse University which revealed that 27 of 50 colleges and universities in the United States house freshmen women in separate halls. This practice is even more prevalent in private universities, where it is practiced by 72 percent of them. Gardner (1957) concluded that when the underclass population is larger than the upperclass, freshmen dormitories are usually successful. Freshmen should not be allowed to dominate the organization of upperclassmen nor should they be dominated by upperclassmen.

There are many problems of grouping freshmen by themselves. For example, at Syracuse University, after a freshman dormitory was occupied, housing administrators found a serious loss of dependable leaders as these leaders became sophomores and moved out. They found this lack of continuity from year to year in hall residents to be a drawback to the establishment of hall traditions and customs which would help them to control such large groups of students (Fairchild, 1961).

Coeducational dormitories. There are increasing numbers of coeducational dormitories in operation today. Most of them have been fairly successful. The most important advantage of coeducational dormitories is the maintenance of higher social standards. More informal social interactions between men and women students living under one roof tend to encourage better general behavior (Greenleaf, 1962). Gone from the scene are the usual "food riots" and "horse play" found in all men's dormitories or the "girls in curlers" in all women's dormitories. Greenleaf further concluded that by combining men and women staff it is possible to use the best qualified leadership, whether they happen to be men or women. The greatest danger in coeducational dormitories, according to Greenleaf, is the loss of opportunity for women to have leadership experience.

Contribution of dormitory living. As an institution, the objective of the dormitory is primarily to fulfill the various needs of students. Gardner (1957) concluded that in spite of changing designs of dormitories and construction materials, the basic needs of students remain the same: (1) shelter, (2) food, (3) study, (4) companionship, and (5) personal growth.

The institutional dilemma. In accommodating masses of students, large-scale or high-rise dormitories often sacrifice individual quality to achieve the quantitative requirements. Bland and Schoenquer (1966) surveyed university housing across Canada and found that "most student residences appeared to have been planned on the basis of purely numerical studies" (p. 1). Their findings do not present a happy picture. Van der Ryn (1965) summed up all the signs and symptoms of what is wrong with the dormitory environment in the word, "institutionalism" and concluded that "institutional syndrome" is a condition which overlaps all the problems of dormitory living. He pointed out that the dormitory "provides physical services for large numbers of people; but in the process it reduces a student's options, and constrains what he does and how he does it" (p. 66). These student-dormitory conflicts have also been mentioned by other writers: Bush-Brown (1957), Riker (1961, 1965), Bland and Schoenquer (1966).

CHAPTER 2

PROCEDURE

The University of Utah is located at the foot of the Wasatch Mountain range and overlooks the Great Salt Lake Valley. Founded in 1850, it is the oldest state university west of the Missouri River. Today more than 17,000 students and 900 faculty members operate in the University's 69 departments, 10 colleges, 2 graduate schools, and medical center-hospital complex. The activities of the University occupy 50 major permanent buildings and 100 temporary buildings on a 639-acre campus (University of Utah, 1967).

The Residence Halls

The University had its first residence hall when Carlson Hall opened in 1936. It now has 6 residence halls housing about 1,300 single students and 500 married students. Because of the nature of their residence and activities, these students play an important part in the presently otherwise predominantly commuter campus.

When a student applies to live on campus, he fills out a card indicating his various preferences and habits. After acceptance, he is assigned to a particular hall and room, according to his choice on hall, roommate, age, and smoking and studying habits. All out of town freshman women are required to live on campus.

A wide range of social and recreational activities is provided and encouraged by the housing staff. Residents also have their own government and newspaper. An intellectual atmosphere is encouraged by such efforts as panel discussions, lectures, pocket-book libraries, and

T-groups. A unique feature is the Professor-in-Residence, who counsels and assists students in many facets of their residence hall life. Student-Advisors (SA's) are carefully selected and trained to assist both the student and the operation of the housing office.

Led by research-oriented directors, the housing office has established a Residence Hall Research Committee, which conducted a number of studies, such as sociometric surveys, ratings of student advisors, and surveys of students who moved out of the residence halls.

The three residence halls of this study are named Austin Hall, Ballif Hall, and Van Cott Hall (hereafter they are referred to as Austin, Ballif, and Van Cott). These three halls form a Residence Hall complex on the eastern campus of the University and on the average are located within a seven-minute walk from the Student Union and the new Library-Learning Center (Figure 1). Of the 1,200 students residing in these three halls, about 50% are freshmen and 25% are sophomores; thus three-fourths of the population are in their first two years at the University. All three halls are co-educational in major social and dining facilities. Some general features of the three halls are discussed below. Table 1 compares features of the three halls in more detail.

Austin Hall was opened in Fall, 1965, and is the newest of the three halls. Its two outstanding features are its having more single rooms than double rooms on each floor (20 singles and 16 doubles) and a central open court in each wing. Architecturally, the exterior has what students called a "fortress" look (Figure 2).

Ballif Hall was opened in 1955 and is the oldest of the three halls.

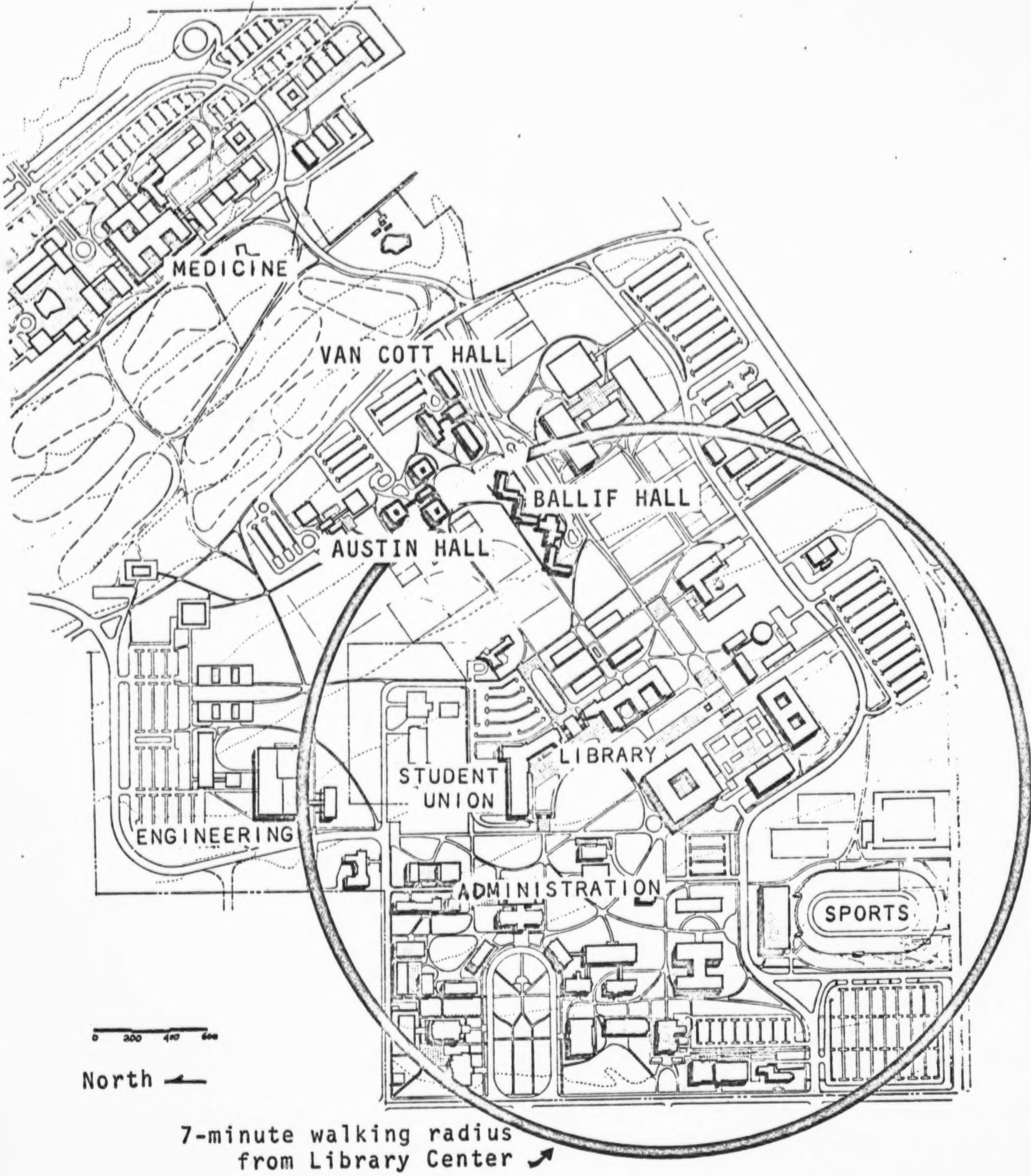
MEDICINE
VAN COTT HALL
BALLIF HALL
AUSTIN HALL
LIBRARY
STUDENT UNION
ENGINEERING
ADMINISTRATION
SPORTS
0 200 400 600
North
7-minute walking radius from Library Center

Fig. 1. The Location of Residence Hall Complex in Relation to Main Campus.

Table 1

Physical Features of the Residence Halls

Features	Austin	Ballif	Van Cott
Year Opened	1965	1955	1962
Capacity (Beds)	459	355	429
Number of Students per Living Group	25-26	12-18	18-26[a]
Number of Floors	3	3	3
Number of Wings	3	6	3
Walking Time from Library Center in Minutes	7-8	4-6	8-9
Room Size:[d] Double	10'4" x 16'	10'2" x 14'	11' x 15'2"
Sq. ft.:	164.8	144.6	
Single[b]	6'6" x 10'4"	6'2" x 10'4"	6'3" x 12'
Sq. ft.:	67.0	63.6	75.0 and 9' x 9' 81.0
Heating Control	Zone[c]	Individual	Zone/Individual
Air Conditioning	Yes	No	Yes
Furniture	Built-ins	No Built-ins	Built-ins
Open Court/Patio	Open Court	None	Patio
Dining Facilities	None	Yes	C-Wing Only
Study Room	Each Floor	Each Floor	Women Only
Kitchen	Each Floor	None	Each Floor
Recreation Room	TV Room	Basement	Large
Drinking Fountain	6 per Wing	1 per 2 Wings	3 per Wing
Laundry Room	1 per Wing	1 per 2 Wings	3 per Wing
Window Size	2' x 4'5"	5' x 4'2"	11' x 4'
Sq. ft.:	8.8	20.9	44.0
Hallway Width	4'2"	3'6"	6'2"
Floor Lounge (Sq.ft.)	762	420	924
Main Lounge (Sq.ft.)	3,000	2,300	3,900

[a] C-Wing consists of apartments of 6 women each with one student-advisor per 18 students.

[b] Few larger singles not included here, since they are for student-advisors.

[c] One thermostat control for 24 doubles or 30 singles.

[d] Room sizes were taken from architect's plans; therefore measurements may be slightly different from actual size.

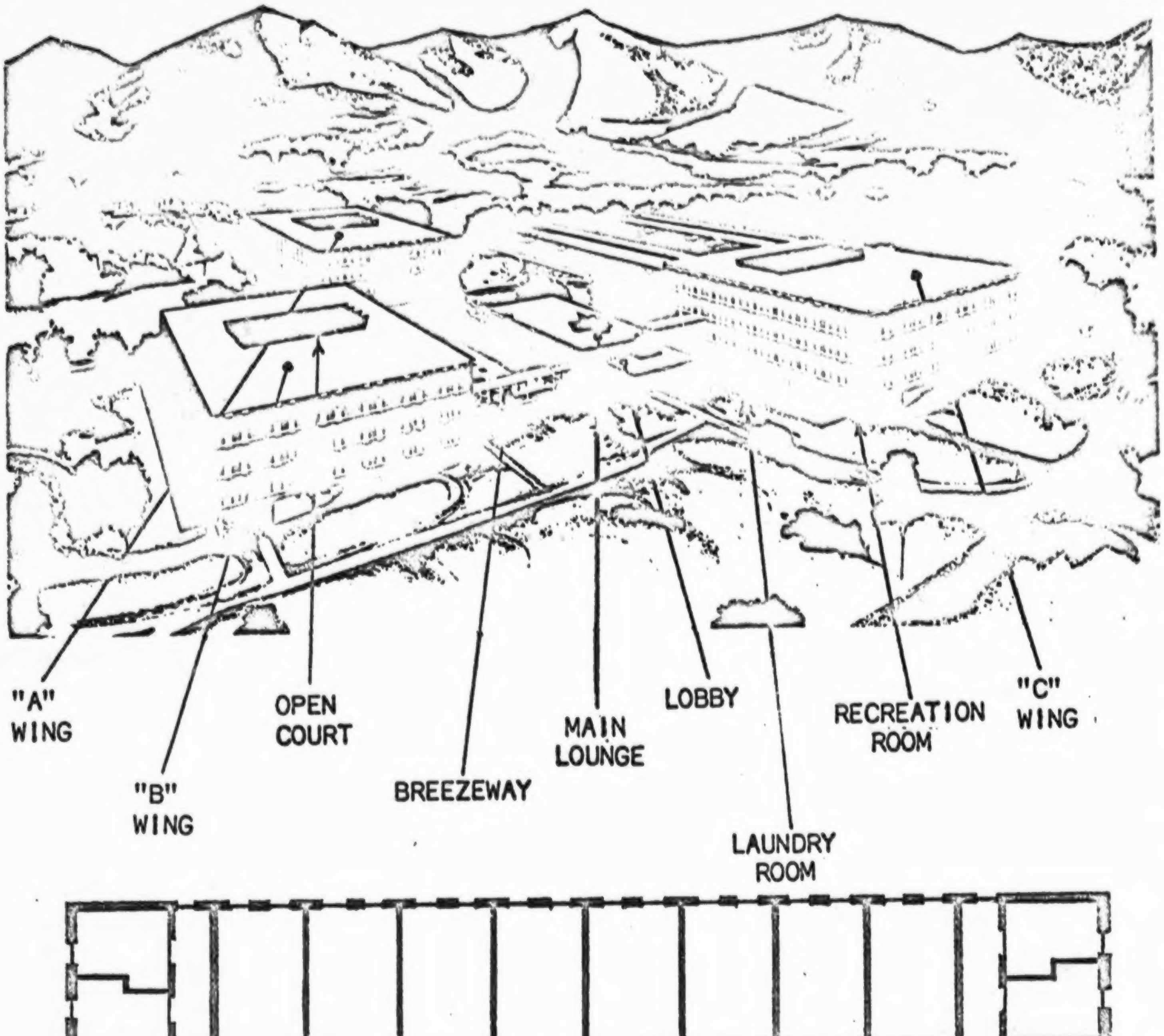
"A" WING
"B" WING
OPEN COURT
BREEZEWAY
MAIN LOUNGE
LOBBY
LAUNDRY ROOM
RECREATION ROOM
"C" WING
BATHROOM
OPEN COURT
FLOOR LOUNGE
STUDY
MEETING ROOM
BATHROOM
KITCHEN
BED
BED
D
DESK
BED
BED
DOUBLE 10' x 16'
SINGLE 6'-5" x 10'-5"

Fig. 2. Perspective View and Floor Layout of Austin Hall.

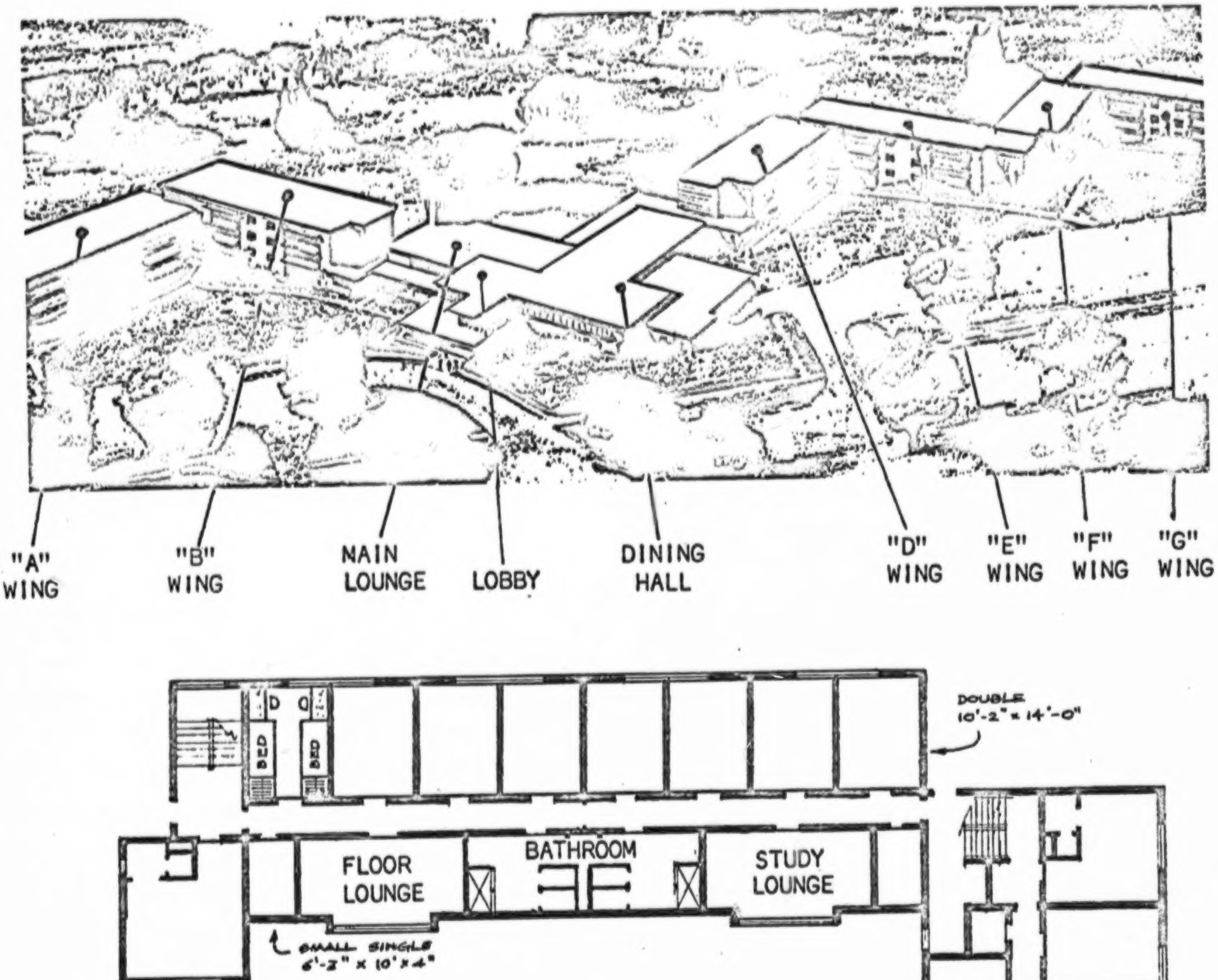
"A" WING
"B" WING
MAIN LOUNGE
LOBBY
DINING HALL
"D" WING
"E" WING
"F" WING
"G" WING
DOUBLE 10'-2" × 14'-0"
D
C
BED
BED
FLOOR LOUNGE
BATHROOM
STUDY LOUNGE
SMALL SINGLE 6'-2" × 10'×4"

Fig. 3. Perspective View and Floor Layout of Ballif Hall.

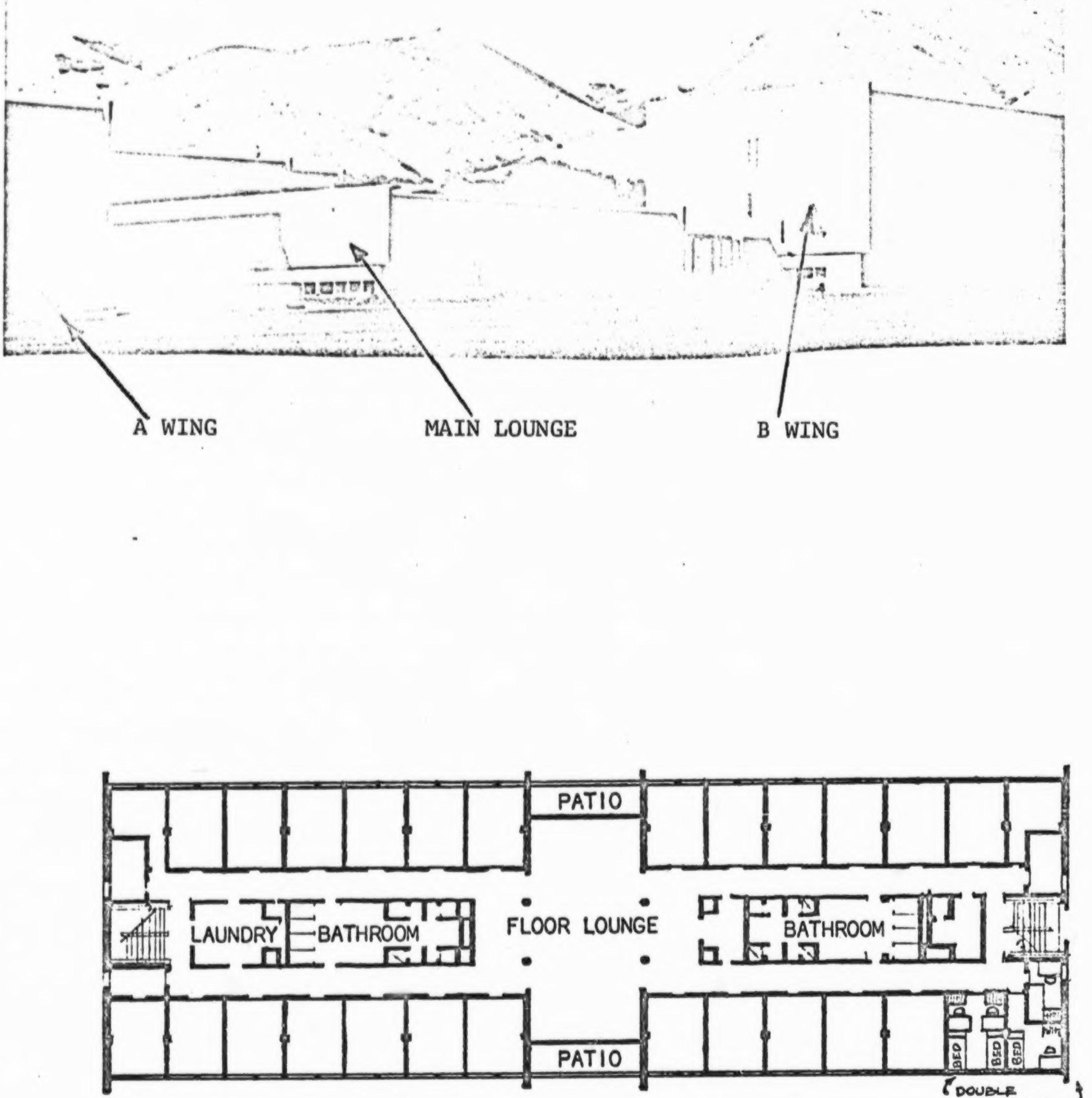
A WING
MAIN LOUNGE
B WING
PATIO
LAUNDRY
BATHROOM
FLOOR LOUNGE
BATHROOM
PATIO
BED
BED
BED
DOUBLE 11'-0"x15'-2"
SINGLE 6'-3"x12'-0"
9'-0"x9'-0"

Fig. 4. Elevation View and Floor Layout of Van Cott Hall

It is characterized by its small living groups and proximity to the dining facilities (Figure 3). About 8 students share a lounge, thus forming an informal group; while two such groups form a living group, supervised by a student advisor.

Van Cott Hall became operative in 1962 and has several unique features: (a) C-Wing has apartments where six girls form small units and cook their own meals, (b) it generally has a more spacious interior and (c) its windows are room-width. Architecturally, its exterior has the "glass-box" look (Figure 4).

The Students in Residence Halls

The sample of students studied, which represents about 25% of the total Residence student population, is described in the Tables 2 to 5.

Home states. Over a third of the students were from Utah. Combined with the 18.4% from California and 21% from other western states, the population indicates three-fourth of the students coming from 11 western states. It may be mentioned that because of the requirement that freshmen women stay in residence halls, 41.8% of the women were from Utah, while only 27.2% of the men were from Utah (Table 2).

Home town population. About a third of all students were from cities with 100,000 or more population, another one-third from cities with population between ten thousand to a hundred thousand. The remaining one-third were from towns of less than ten thousand population. For these three categories of students, however, there were some notable variations in terms of the residence halls in which they resided.

Table 2

Percentage of 288 Students by

Home States and Home Town Population

Per cent of: N =	Total (288)	Men (169)	Women (119)	Austin (100)	Ballif (94)	Van Cott (94)
Home States:						
Utah	35.1	27.2	42.8	30	23	36
California	18.3	20.1	14.2	22	18	23
Western[a]	21.0	18.8	21.8	20	19	19
Mid-western[b]	12.2	11.8	13.0	8	8	12
Southern[c]	3.1	4.1	1.6	4	7	-
Eastern[d]	7.8	9.4	5.1	4	2	9
Hawaii	1.2	1.7	1.1	4	2	-
Other Countries	3.0	6.9	-	8	-	-
Home Town Population:						
500,000+	16.5	18.3	14.1	20	18	10
100,000+	14.8	16.5	11.4	12	17	14
10,000+	35.4	31.9	42.8	36	24	45
5,000+	14.1	13.0	16.8	13	15	12
1,000+	11.1	12.4	10.0	9	23	11
999-	7.7	7.6	7.8	10	4	8

[a] 9 states: Washington, Oregon, Idaho, Montana, Wyoming, Colorado, New Mexico, Arizona, and Nevada.

[b] 12 states: N. Dakota, S. Dakota, Nebraska, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio.

[c] 16 states: Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Tennessee, Alabama, Georgia, Florida, Kentucky, N. Carolina, S. Carolina, Virginia, W. Virginia, Maryland, and Delaware.

[d] 9 states: New York, Pennsylvania, New Jersey, Connecticut, Massachusetts, Rhode Island, New Hampshire, Vermont, and Maine.

Table 3

Parents' Education, Family Income,

Previous and Present Type of Dwelling

N=	Total (255)	Men (139)	Women (16)	Austin (76)	Ballif (94)	Van Cott (85)
Education[a] of:						
Father	1.94	1.93	1.95	1.92	1.93	1.96
Mother	1.62	1.63	1.63	1.64	1.60	1.62
Annual Family Income[b] (Thousands of Dollars)	17	17	17	20	13	20
Type of Dwelling Prior to Residence Hall: (per cent)						
Single House	66	63	69	54	65	78
2-4 Units	6	7	4	8	6	3
5 Units or More	6	6	5	5	6	6
Others	22	23	22	33	22	13
Type of Present Residence Hall Room: (percent)						
Single	14.9	17.1	11.7	37	5	6
Double	74.5	83.4	61.3	63	95	60
Apartment	10.8	-	26.0	-	-	33

[a] 1.00 = High School diploma; 2.00 - College degree

[b] It was somewhat surprising to find such a high average family income being reported, and to note the difference between those in the older (Ballif) residence hall and those in the two newer residence halls.

Table 4

Parents' Education, Family Income,
Previous and Present Type of Dwelling

Majors	Total	Men	Women	Austin	Ballif	Van Cott
Business	7.3	8.2	5.8	4	7	10
Education	8.7	5.9	12.6	8	10	7
Engineering	11.5	18.9	0.8	12	12	9
Fine Arts	7.3	1.7	15.1	6	10	5
Law	2.8	2.9	2.5	2	2	4
Letters and Science	31.5	33.1	28.5	41	27	22
Medicine	7.7	8.2	6.7	5	8	9
Mines and Minerals	1.7	2.9	-	1	2	2
Nursing	2.4	-	5.8	2	1	4
Pharmacy	2.8	2.5	1.6	2	6	-
Social Work	2.4	1.7	3.3	2	2	3
Undecided	13.3	11.8	15.1	12	7	19

Class Standing	Total	Men	Women	Austin	Ballif	Van Cott
Freshman	49.8	44.9	54.6	35	50	50
Sophomore	25.4	26.0	23.5	27	24	21
Junior	13.0	14.7	19.3	17	10	9
Senior	8.8	9.4	7.3	15	5	5
Graduate	2.8	2.9	2.5	5	3	0

Time on Campus	Total	Men	Women	Austin	Ballif	Van Cott
Quarters in college[a]	5.7	6.0	5.4	6.9	5.4	4.8
Quarters in present Residence Hall	2.7	2.5	2.8	2.3	2.7	2.5
Quarters in other Residence Halls	0.9	1.2	0.5	1.6	0.5	2.6
Quarters lived Away from home	3.0	3.0	3.0	3.0	3.3	2.6

[a] One school year is considered three quarters excluding summer quarter.

Table 5

Percentage of 288 Students and Their

13 Self-rated Personality Characteristics[a]

Personality Characteristics	Total	Men	Women	Austin	Ballif	Van Cott
Emotional Stability	2.3	2.3	2.4	2.2	2.3	2.4
Leadership	2.7	2.7	2.7	2.7	2.7	2.7
Popularity	2.8	2.9	2.8	2.8	2.9	2.8
Dependability	2.1	2.2	2.1	2.1	2.1	2.1
Drive to achieve	2.3	2.3	2.2	2.3	2.3	2.2
Sociability	2.7	2.8	2.5	2.8	2.8	2.5
Aggressiveness	2.8	2.7	2.8	2.8	2.8	2.6
Self-control	2.3	2.3	2.4	2.2	2.4	2.3
Self-understanding	2.3	2.3	2.2	2.2	2.3	2.3
Perseverance	2.4	2.4	2.4	2.4	2.5	2.4
Adaptability	2.2	2.1	2.2	2.1	2.1	2.3
Sensitivity to surroundings	2.4	2.4	2.3	2.4	2.3	2.4
Originality	2.6	2.6	2.5	2.5	2.6	2.6

[a] On a five-point rating scale, 5 = very high, 3 = average, and 1 = low. Personality characteristics (except adaptability and sensitivity to surroundings) are taken from Jacobsen, Price, de Mik, and Taylor (1965).

Personality differences. Table 5 presents students' self-rated personality characteristics. No major personality differences seemed to exist between students from different halls. It should be noted that students rated themselves high on popularity, sociability, aggressiveness, and low on dependability and adaptability.

Exploring an Instrument for Investigation

This section describes how the simple approach of asking questions was tested and revised; also how the final questionnaire was distributed, collected, and analyzed.

The simplest and most direct method for investigating the student-residence hall relation seemed to be simply to ask the students. Since these relations are relatively unexplored, it was decided that obtaining general information covering overall aspects of the environment--in other words, a bird's eye view--would be more helpful than concentration on a specific area.

Through an understanding of the "whole" environment, the specific problem areas can be brought into sharper focus. The primary objective of the instrument for investigation, therefore, was to obtain as much information from as many people as possible. The most logical answer to this is the questionnaire, which has proven to be a reliable tool in the assessing of attitudes. Although only conscious written responses can be obtained by this technique (Sommer, 1966), it has the advantage of being able to extract a large amount of information in a short time. In other words, the reactions of respondents are surveyed simultaneously; therefore the effects of time, interaction with other students, or the interviewer's personality, as found in other methods, such as depth interviews, are kept at a minimum.

Questionnaires have been used to survey residence hall environments at the University of California's Berkeley (Van der Ryn, 1965) and Davis (Sommer, 1966) campuses, and at Princeton University (Perry, 1965). The Princeton study was developed primarily by real estate agents and architects for a junior faculty residence hall. Perry (1965) commented that the questionnaire "boils down to a rather specific 'how do you like your eggs?'...in fact, the questionnaire raises far more questions than it answers" (p. 135). Nevertheless, these three examples served to guide the construction of the present questionnaire.

Exploratory study at Austin. A rudimentary three-part questionnaire was drafted in the spring of 1966 for Austin Hall, where the writer then resided. In the questionnaire, the physical environment of the building was dissected into 20 elements. Each element was to be rated on a three-point scale of good, average, and poor. A second part of the questionnaire consisted of basic questions concerning the students, such as class, major, and the type of rooms, etc. Several open-ended questions about what students liked or disliked in the residence halls were also included.

The most significant results from the 130 respondents concerned the liked and disliked features of the residence hall. In regard to the features they liked most, students mentioned a wide range of facilities, with no specific one outstanding. However, there was a clear consensus of features least liked: the central patio, with 41% of the complaints; heating, with 31%; and small windows, with 32%, were the major areas of complaint. The conclusions on these features were further supported by the students' ratings of various features and by students' recommendations on improvements for the halls.

Replication study at Ballif. A revised Austin questionnaire was administered to 20 students in Ballif Hall. There were no noticeable differences in the manner of answering the questionnaire between students from Ballif and the previous study. The general appearance of the hall was least liked by Ballif students, while in Austin, specific features had been singled out for complaints. The small living group arrangements (12 - 18 students per group) were favored by most students. Among Austin students living arrangements for groups had never been mentioned.

Applicability study. The previous questionnaire was again modified and administered to forty-nine students from Austin, Ballif, and Van Cott to test the applicability of the final questionnaire in these three different environments. The questionnaire was generally applicable, and students were interested in expressing their views on the residence hall environment. Most students answered the questions conscientiously and expressed their views freely, some even enthusiastically.

The interest expressed by the students and the amount of information obtained from these three pilot studies confirmed the general merit of the questionnaire. It was through this "trial and error" process that the final questionnaire was revised and constructed.

Questionnaire Methodology

Structure of the questionnaire. The questions to be asked of students fell into two groups: those concerning the students themselves and those concerning the residence halls. The first group consisted of background information and comments on satisfaction of the students' needs; the second group consisted of the evaluation of residence halls and suggestions for improvements. Careful attention was given to structuring the questionnaire to maximize the interest and involvement of the respondents. Items or questions in the four sub-groups were placed throughout the questionnaire to create a flowing pattern.

Table 6

Location of Items as Numbered in the Questionnaire

Information Sub-group	Part 1	Part 2	Part 3
Student Background	1-14		1-18
Student Needs	15, 16	26-29	
Residence Hall Evaluation		1-24, 30	19-22
Residence Hall Improvement		25	23

A sample of the final questionnaire is presented in Appendix 1.

The sequence of items in the questionnaire gave it the following structure:

1. The questionnaire was preceded by a letter addressed to the student expressing our interest in him and asking for his cooperation.

2. The top part of the first page explained the purpose of the questionnaire and reminded the respondent of the confidential nature of the study. The rest of page one was the usual information regarding students' background, which could be answered easily by the respondents;

it was designed to put him at ease and arouse his interest in answering the questionnaire.

3. Most of page two contained the ratings of various parts of the residence hall. This was probably the most unusual part of the questionnaire, since students are seldom given an occasion to grade other persons or things. The novelty of grading his own residence hall would, it was hoped, heighten his interest in the questionnaire.

4. Following his making the ratings, the respondent was given a free hand in naming the facilities or features he would like to have in the residence hall. (In a way this let him day-dream a little.)

5. After the easy course so far, items #26 to #29 on time usage and space usage began to require some thinking and effort.

6. Again the respondent was relaxed by having another chance to indicate his preference on various living groups (#30).

7. Following the preceding easy and interesting topics, the most "touchy" questions were presented regarding the student's family and personal evaluation.

8. The open-ended questions took up the last page. It was hoped that earlier pages would stimulate thinking and thus elicit more insightful answers to problems and suggestions for the residence halls.

9. Finally, to obtain some direct feedback on the study, the respondent was given an option to comment on the questionnaire itself.

Sampling procedures. To obtain a representative cross-section of the residence hall population, some sub-grouping was needed to accommodate the variations of hall, wing, floor, and sex distributions. The organization of the Student Advisors (SA's) provided a convenient method of grouping. Within the three halls, there were 53 SA's, each in charge of between 12 to 28 students. Since the population in each group was homogeneous for the above-mentioned four variations, 53 population sub-groups were formed, each with one SA.

For an adequate representation of the population, a sample size of seven from each sub-group was selected by using the table of random sampling numbers (Li, 1966). Thus, 25% to 58% of each sub-group (31% of the total population) was sampled.

Scheduling. At the University of Utah, where an academic quarter consists of 10-11 weeks, the timing of the questionnaire administration was of great importance. The attitudes and interests of the students are generally affected by examinations, special events, or the beginning and ending of a quarter. Therefore, the second weekend of the winter quarter in 1967 was selected as a typical weekend. By then after two weeks of classes, the students were reasonably settled. Also, it was just after the Challenge Week (a week-long event with distinguished speakers lecturing on many challenging areas) and it was a weekend away from the mid-term examinations.

Early in the week, all Student Advisors (SAs) had received a personal letter from the Housing Director, informing them of the forthcoming questionnaire. Then, Thursday evening, sets of seven questionnaires along with selected names were given to the SA's personally or through another SA. They in turn distributed the questionnaires to the selected students in their rooms.

Collection. The respondents were instructed to return the completed questionnaires to their SAs before Sunday at 8 p.m. The SAs then were asked to deliver them to the Housing Office by Monday, at 6 p.m. As it actually happened, only about one-fourth of the questionnaires had been returned by the designated time. After two more days, another one-fourth of them were returned. Finally, when about 80% of the questionnaires had been returned by the following week data collection was terminated. A check on the returned questionnaires revealed that there were responses from all 53 sub-groups. The non-responses spread out evenly among three halls. A total of 101 (22%) questionnaires were returned from Austin; 102 (28%) from Ballif and 93 (22%) from Van Cott.

Data analysis. The first three pages of the questionnaire solicited mostly quantitative information, whereas the fourth page asked of open-ended questions. These latter appear to be more qualitative and therefore were treated differently.

All data on the first three pages of the returned questionnaires (except #25 and 27 on Part 11) were translated into 80 variables in numerical terms and punched into IBM data processing cards for analysis at the University of Utah Computer Center. The program used to compute the means and communalities was the 300 Varimax. To conform to the requirement of the computer program, several questions were specially categorized:

1. Part 1 #7, grade point averages were grouped into six groups: 1.0+, 1.5+, 2.0+, 2.5+, 3.0+, and 3.5+.
2. Part 1 #8, majors of students were grouped into the 12 colleges of the University as shown in Table 4.
3. Part 1 #9, home states were grouped into 9 geographical areas as shown in Table 2.

4. Part 1 #12, the number of quarters students had been away from home was grouped in 0, 1-3, 4-6, 7-10, 10-12, and 12 or more quarters.
5. Part III, 1 and 3, education levels of the parents were grouped into four, i.e., grade school, high school, college, and graduate school or professional training.
6. Part III, 2 and 4, the vocations of parents were grouped into 17 groups. However, for practical purposes, these data were not analyzed in the study.

To obtain a general index of students' evaluation of various hall elements, the ratings for each of the 24 elements were combined. Rating of "excellent" was scored as 5, while "very poor" was scored as 1 on the index scale, thus giving a possible range of 24 to 120. Other scores were derived by obtaining frequency counts on each of the following types of data: type of room, class, major, home state, population of home town, type of home. For the open-ended questions on the last page and #25 of Part 1, a frequency count on the items mentioned by students was made. These counts were then translated into percentages for different living groups. For #23 and 25 of Part 1, a representative list of suggestions (Appendix IV) and the 20 most frequently suggested improvements (Figures 6-8) were generated.

CHAPTER 3

RESULTS

This chapter presents the questionnaire responses in two parts. The first part concerns the students' evaluations of the residence-hall environment, and the second examines the students' behavior in relation to the particular residence-hall environment in which they live.

Evaluation of the Residence Halls

To provide an index of how students react to 24 architectural elements of the residence halls, a profile of students' ratings is presented in Figure 5. The communalities (indicating the lower limits of coefficients of reliability) among these 24 elements ranged from 0.62 to 0.84, with a mean of 0.71 (Appendix VI). The lowest-rated element among all halls was soundproofing, both between rooms and in the hallways. Food service was rated next to the lowest and was followed by recreation room. Other elements receiving low ratings were closet space, heating system, and the open courts in Austin.

Among the highest-rated elements were site location, bathrooms, and furnishings in the lounges. Study space, arrangement, and space usage of the lounges were also rated relatively high.

Sex difference. Figure 6 shows mean ratings by men and women. It can be seen that with few exceptions, the ratings of both men and women follow a general pattern, with men rating most elements lower than women. However, women's ratings are lower than men's regarding lighting, bathroom, bedroom size, and bedroom soundproofing. Next to soundproofing, women rated closet space the lowest.

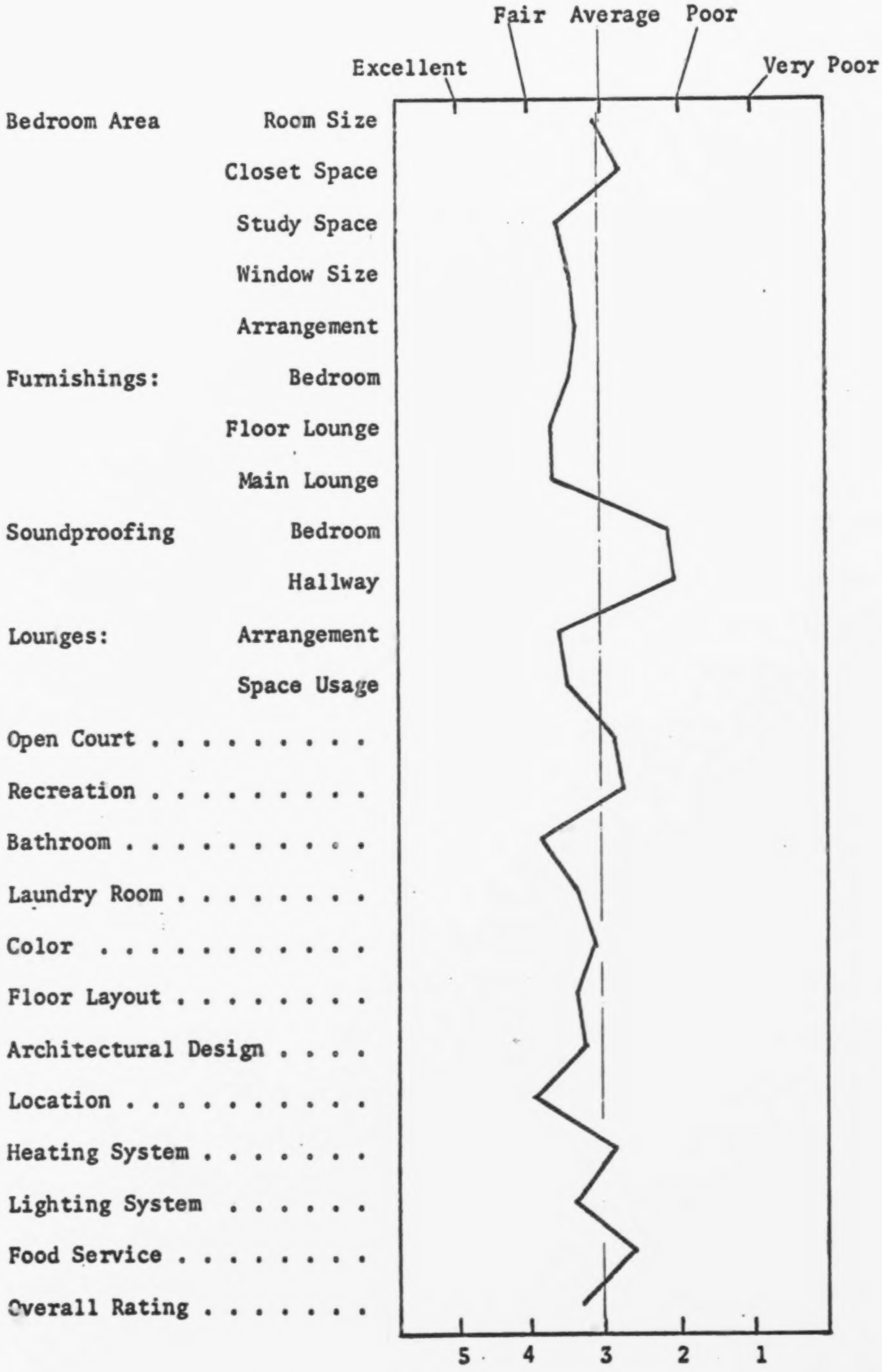

Fig. 5 Profile of Ratings by 288 Students on 24 Elements of Residence Hall Environment.

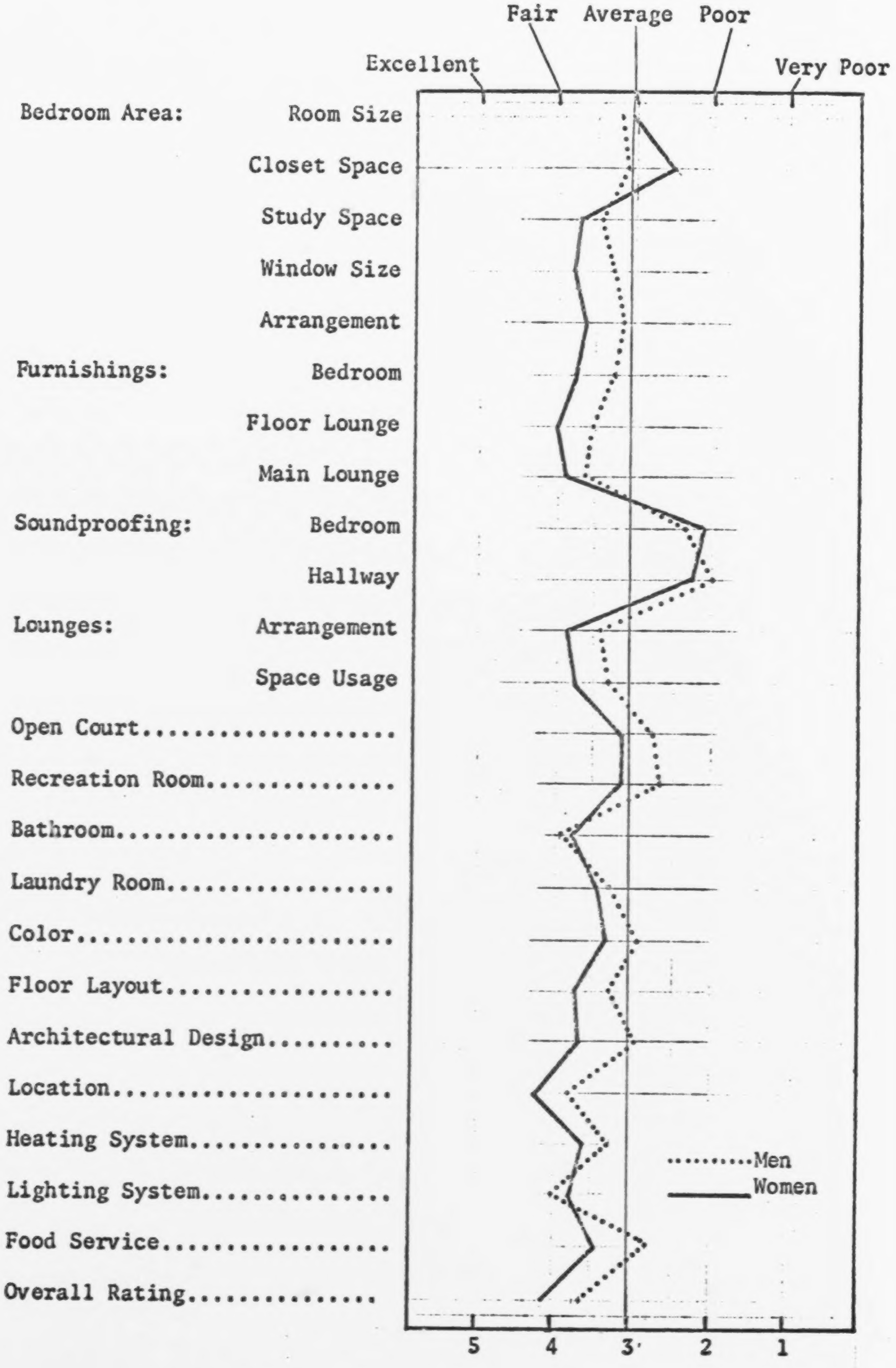

Fig. 6. Profile of Ratings by Men and Women Students on 24 Elements of Residence Hall Environment.

Hall differences. Figure 7 shows mean ratings of elements by students in each hall. All but four of the elements in Ballif received the lowest rating, whereas in Van Cott, all except four elements received the highest rating among the halls. Austin's ratings tended to be in the middle.

Austin's window size and heating system were rated lowest among the halls; soundproofing, open court, and recreation rooms are the other elements receiving very low ratings in Austin. The closet space in Austin was rated highest among halls, while lounge furnishings, bathrooms, location, and laundry rooms were also rated relatively high.

The elements with the lowest rating in Ballif were soundproofing, recreation rooms, closet space, main lounge furnishings, and color. On the other hand, the locations, window size, and bathrooms of Ballif were rated relatively high.

Among the lowest-rated elements in Van Cott's otherwise high ratings were soundproofing, closets, and food service. Among the highest rated of Van Cott's elements are window size, main lounge furnishings, architectural design, floor layout, overall rating, and study space.

General rating score. When the ratings on each element were pooled together to form a general rating score for each respondent (Table 7),[1] as described in procedure of Chapter 2, the overall mean rating of all

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[1] In both Table 7 and Figure 8, A Wing of Ballif represents mean ratings of two women's wings, "A" and "B"; C and D Wings in Ballif represent mean ratings of four men's wings, "D," "E," and "F," "G," respectively.

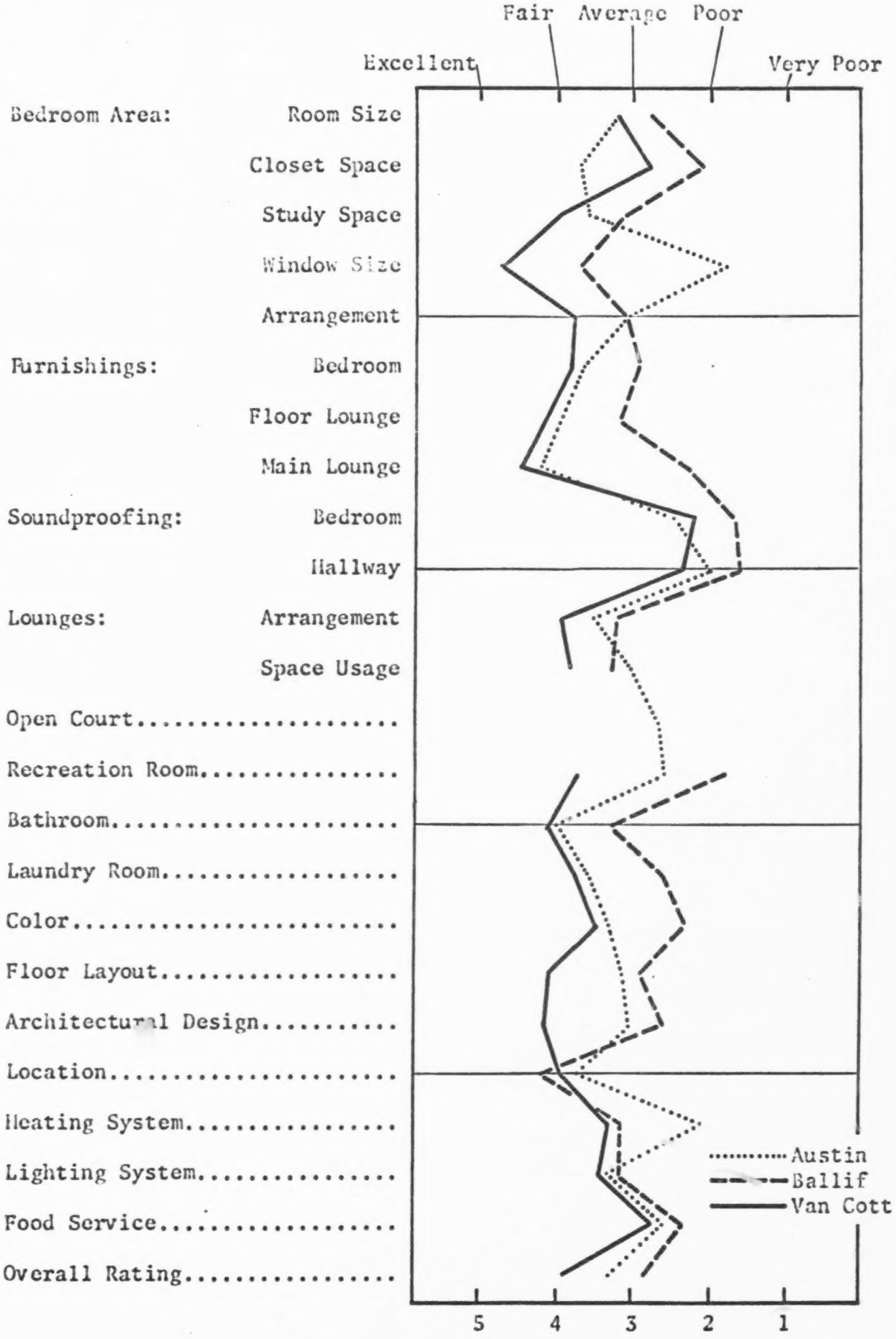

Fig. 7. Profile of Ratings by Austin, Ballif, and Van Cott Hall Students on 24 Elements of Residence Hall Environment.

Table 7

General Ratings[a] of 24 Architectural Elements by 296

Students in 3 Residence Halls

Hall		Austin (N=101)			Ballif (N=102)			Van Cott (N-93)		
Wing		A	B	C	A	B	C	A	B	C
Student	1	64	57	48	67	69	78	102	60	60
	2	68	88	77	50	59	73	76	85	81
	3	74	59	61	66	82	102	83	84	79
	4	59	95	73	52	62	76	101	65	73
	5	99	68	89	71	61	64	66	81	70
	6	67	83	71	56	74	52	98	93	86
	7	70	85	94	60	64	77	90	88	76
	8	59	74	93	52	66	72	74	91	70
	9	99	89	72	67	60	55	100	87	76
	10	38	88	97	53	67	61	73	83	89
	11	72	61	76	92	50	91	83	62	76
	12	52	83	76	54	82	88	100	80	116
	13	73	81	67	75	86	69	112	66	81
	14	70	72	52	65	71	78	78	79	99
	15	64	82	88	57	49	87	101	88	82
	16	100	90	65	91	82	66	87	84	92
	17	72	85	83	62	75	68	75	91	72
	18	82	57	70	63	76	68	104	61	75
	19	75	75	57	59	72	53	84	93	79
	20	83	81	62	73	49	58	89	84	85
	21	58	64	68	62	60	64	63	84	114
	22	78	77	89	64	58	58	82	87	85
	23	79	67	93	48	57	64	103	96	88
	24	78	67	81	85	67	52	76	101	86
	25	70	84	68	78	60	68	107	87	74
	26	101	82	64	81	75	72	80	71	80
	27	91	84	59	69	60	58	84	64	95
	28	72	83	72	66	58	63	60	102	71
	29	48	62	73	77	61	54	91	87	
	30	59	83	61	69	65	68	78	69	
	31		53	67	56	70	46	78	76	
	32		82	70	58	71	56		92	
	33		75		56	56			86	
	34		86			68			90	
	35		71			65				
	36		64			64				
	37		69			62				
Mean:		72.46	74.33	73.00	65.27	65.75	67.46	86.39	82.26	82.50

Mean Ratings: 73.43 (Austin) 66.16 (Ballif) 83.71 (Van Cott)

72.44 (Men) 76.79 (Women) 74.43 (All 296 Students) residence halls is 74, which is slightly higher than the median (72.43) with ratings ranging from 24 to 120. Mean ratings of three wings of each hall showed consistently similar ratings between the wings within each hall (F = 0.48; df = 6/243) but different levels of rating across the three halls (F = 32.5; df = 2/243) (see Figure 8 and Appendix VII).

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[a] Possible range of 24 (very poor) to 120 (excellent). Rating intervals are 48 (poor), 71 (average), and 96 (fair).

Students' preferences. Additional mean ratings of each hall can be found in the choice patterns made by students (Part II, #30 of Questionnaire). As shown in Table 8, Van Cott was the most popular hall. Of the six classifications made (as listed in the first column of Table 8), it was the first choice for three and the second choice for the other three. Off campus living was the second popular choice; it was the first choice for women, second choice for Van Cott and the overall population, and the third choice for the other three groups. The third popular choice was Austin, which was the first choice for Austin students, second choice for men, third choice for overall population, women, and Van Cott, and it was the fourth choice for Ballif. The fourth popular choice was Ballif, which remained the first choice for its own residents and was the fourth choice for four other groups and the last choice for women. The least desirable of the six living groups clearly was the Fraternity/Sorority. Fraternity/Sorority were the last choice for all except women who put it as their next to the last choice.

Students' likes and dislikes. A wide variety of subjects was mentioned by students in response to the four open-ended questions concerning features of the halls. In order to present the results, this information was categorized into 49 items and then grouped in three

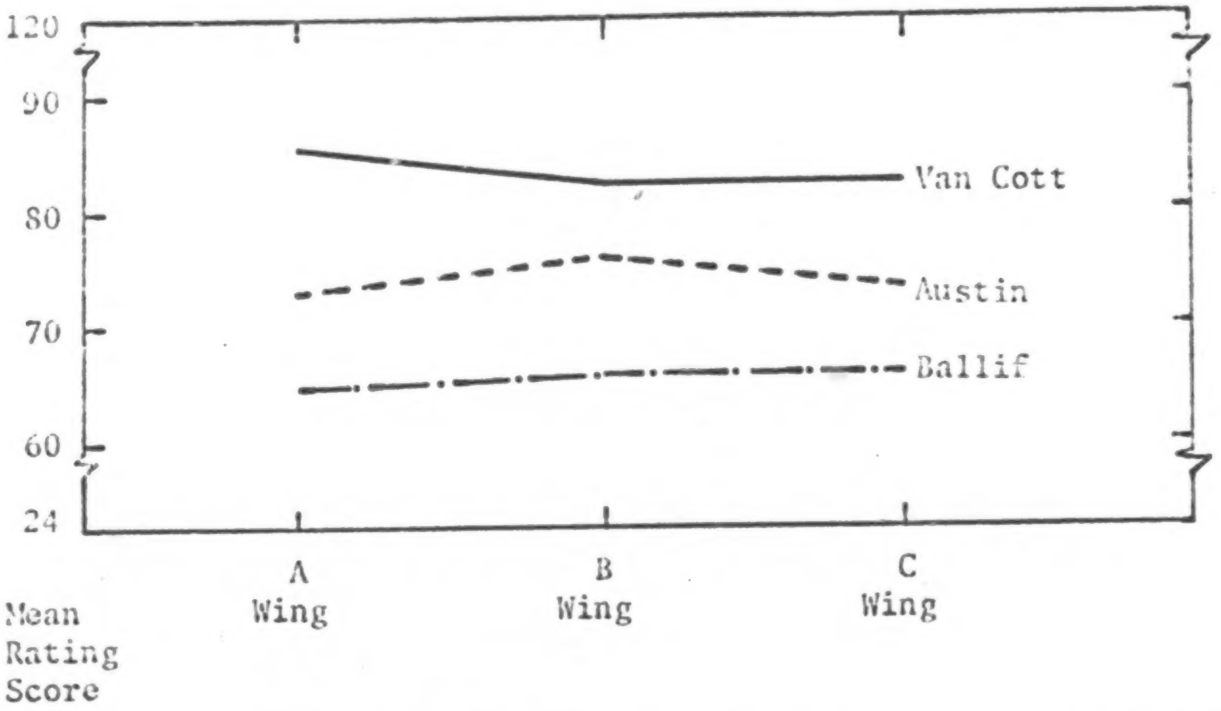


Fig. 8. Mean rating scores of three wings in each residence hall.

Table 8

Student Preference of Five Residence Settings[a]

Living Group	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice
Austin	A	C	o	B	f
Ballif	B	C	o	A	f
Van Cott	C	o	A	B	f
Men	C	A	o	B	f
Women	o	C	A	f	B
All Students	C	o	A	B	f

[a] Five settings are denoted as follows:
A - Austin
B - Ballif
C - Van Cott
o - Off-campus
f - Fraternities and Sororities

main areas of the residence-hall environment: room area, floor area, and hall area. Table 9 shows the percentage of students in each hall who mentioned items favorably and unfavorably. The data were from items 19 and 20 of Part III in the questionnaire.

Major problem or success areas. Twenty of the most often mentioned pleasing or annoying physical features are charted in Figures 9 and 10, to focus on the major problem and success areas of the residence halls.

Figure 9 shows that among all halls the most pleasing feature is the window in Van Cott. Respectively, Van Cott's floor lounge, Ballif's location, and Austin's bathroom and open court were all mentioned favorably by at least 15% of the respondents.

Figure 10 shows that the most annoying element among all halls was the windows in Austin, which drew unfavorable comments from almost half of the respondents. The heating system and open court at Austin were other major annoyances. Noise posted a common problem among the halls, with nearly a quarter of all students mentioning it. Other major annoyances, reported by over 15 percent of the respondents, were the closets at Van Cott and Ballif, the room size of Ballif and Van Cott, and Van Cott's bathrooms.

Student suggested improvement. Improvements suggested by respondents of each hall are presented in Tables 10, 11, and 12. In Austin Hall, as shown in Table 11, almost a quarter of the students suggested better soundproofing and larger windows. Other suggestions mentioned by over ten percent of Austin students were quiet study rooms, individual heat controls, better heating and cooling system, oven in kitchen, and improved open court.

Table 9

Percentage of 296 Students Commenting Favorably and Unfavorably on Physical Elements in Residence Halls

Favorably Mentioned			Physical Elements		Unfavorably Mentioned		
Austin	Ballif	Van Cott			Austin	Ballif	Van Cott
10	0	9	Room Size	Room Area	9	25	14
0	0	1	Room Shape		1	3	1
5	1	0	Single Room		0	2	0
1	0	2	Noise		23	26	31
0	1	0	Heating System		22	12	9
0	0	1	Heating Control		12	0	3
0	0	1	Heater Location		15	0	0
1	2	5	Lighting		7	9	7
0	2	0	Door		0	1	4
0	17	41	Window		48	0	3
7	2	4	View		1	0	2
0	0	0	Curtain		0	2	3
1	0	2	Wall Material		2	9	1
0	0	0	Thin Wall		2	2	0
0	0	0	Exposed Piping		0	3	0
12	3	12	Arrangement		5	4	7
12	1	2	Closet		7	16	23
3	3	2	Drawer		1	3	4
1	3	1	Bed		0	1	4
2	0	0	Mirror		0	1	6
1	0	0	Chair		0	3	2
4	0	3	Desk		0	3	2
1	1	1	Bulletin Board		0	1	1
4	1	3	Bookshelf		1	6	4
3	0	1	Phone		0	0	1
0	0	0	Electrical Outlet		2	2	4
7	5	20	Floor Lounge	Floor Area	6	4	2
6	9	8	Floor Layout		3	2	1
0	14	0	Floor Group Size		0	0	0
1	2	1	Hallway		6	9	4
0	1	0	Stairway		1	1	3
3	1	0	Lounge Furniture		0	2	1
15	0	8	Open Court/Patio		30	0	0
0	0	7	Recreation Room		1	3	3
1	0	0	TV Room		0	4	0
2	2	8	Study Room		4	2	1
5	0	5	Laundry Room		2	4	5
16	0	9	Bathroom		0	6	14
5	0	9	Kitchen		3	1	4
1	0	0	Storage Room		1	0	4
3	0	2	Drinking Fountain		0	1	0
9	0	13	Main Lounge	Hall Area	1	2	0
3	1	0	General Layout		0	1	0
2	0	3	Furnishing		0	0	0
1	0	0	Overall Color		2	14	7
5	22	2	Location		2	0	3
1	1	7	Landscape		0	0	1
11	4	0	Exterior Design		0	1	2
14	0	10	General Design		3	0	3

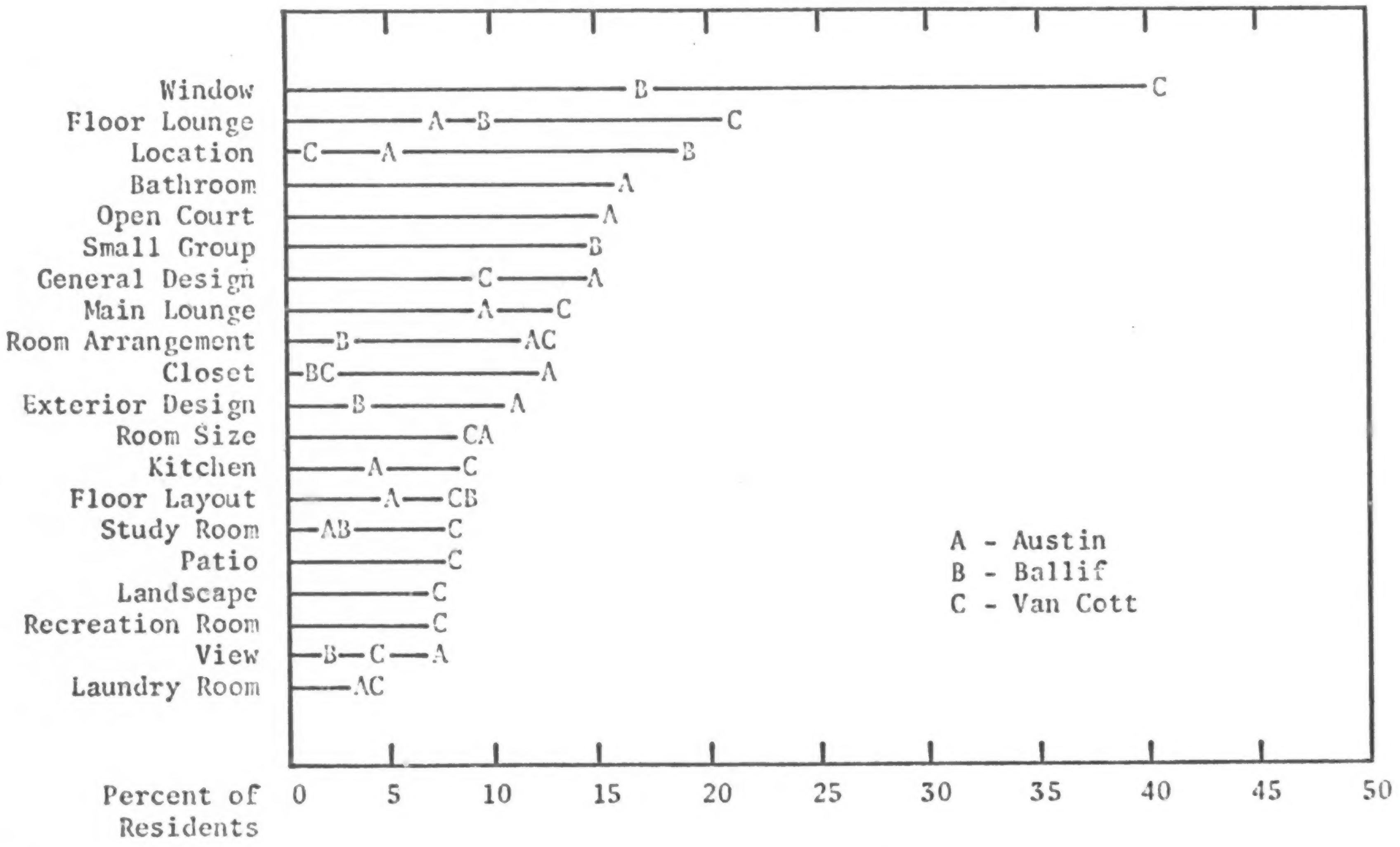


Fig. 9. Most Pleasing Physical Features in 3 Residence Halls

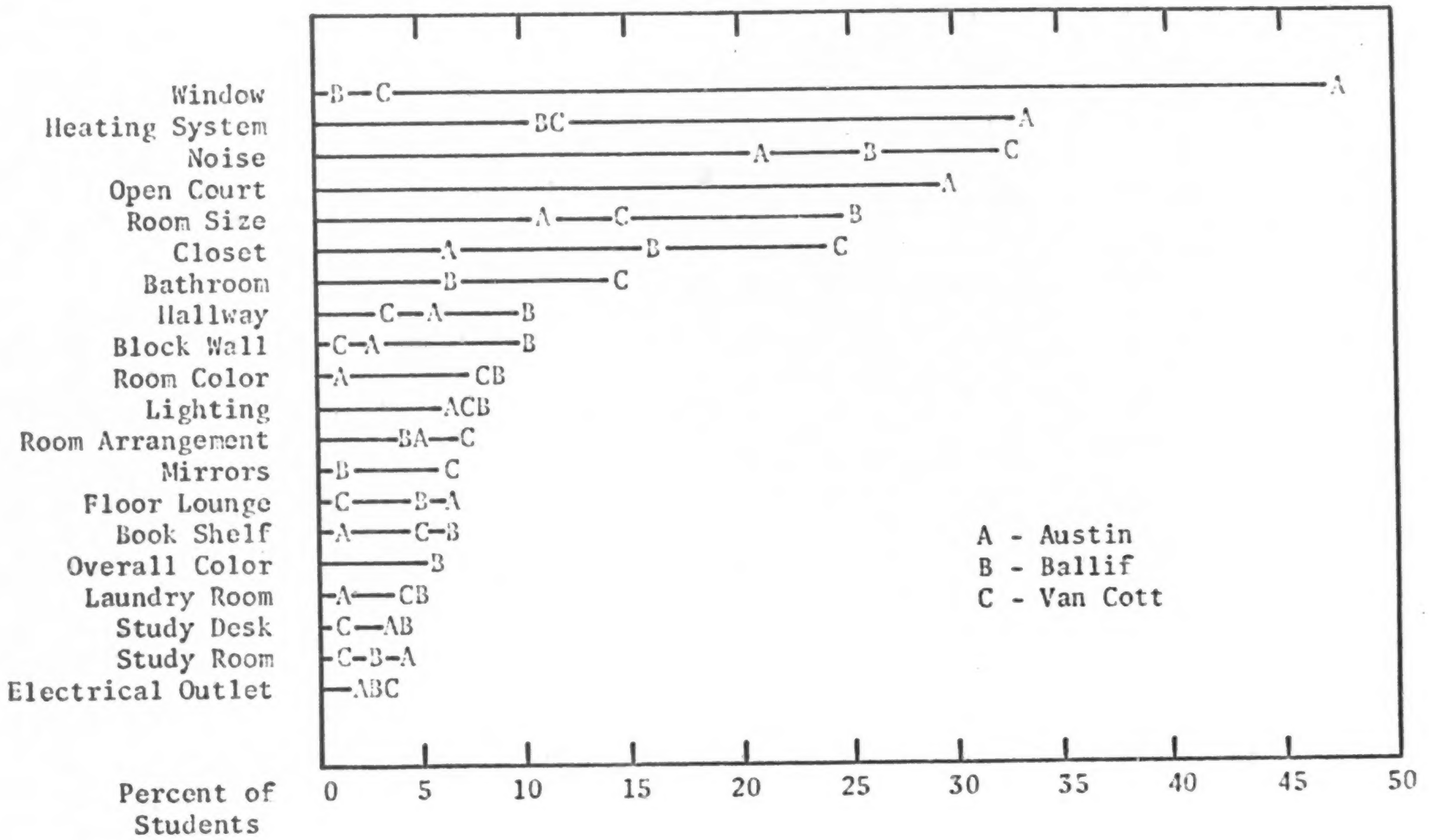


Fig. 10. Most Annoying Physical Features in 3 Residence Halls

Table 10

Improvements Suggested for Austin Hall

Improvements Suggested	Percentage of Students Who Made the Suggestion
Better soundproofing	23
Larger windows	22
Quiet study rooms	14
Individual heating controls	12
Better heating and cooling	11
Kitchen with oven	11
Improve open court	10
Carpeting in rooms and halls	9
More closet space	8
Larger rooms	8
Separate TV room	8
More electrical outlets	8
Better lighting	7
More comfortable color	7
Recreation room	6
Better and heavier curtains	6
Better food service	5
Laundry room on each floor	5
More versatile arrangement	5
More comfortable chairs	5

Table 11

Improvements Suggested for Ballif Hall

Improvements Suggested	Percentage of Students Who Made the Suggestion
Better soundproofing	19
Better arrangement	16
Different colors	13
Larger closets	13
Carpeting in rooms	11
Larger rooms	10
Better lighting	10
Better study rooms	7
Add cooking facilities	7
Better recreation rooms	6
More electric outlets	6
New furnishings	6
Air conditioning	6
Bathtubs	5
Heavy curtains (girls)	5
Redecorate loungs	5
More modern furniture	5
More single rooms	4
Improved TV room	3
Bigger laundry room	3

Table 12

Improvements Suggested for Van Cott Hall

Improvements Suggested	Percentage of Students Who Made the Suggestion
Better soundproofing	20
More closet space	18
Larger rooms	13
Better lighting	13
Better color	7
Individual heat controls	7
Larger laundry rooms	6
More bookshelves	6
More versatile arrangement	6
Full-length mirrors	5
More electric outlets	4
More balconies	4
Quieter study rooms	3
Larger and movable desks	3
Comfortable chairs	3
Better curtains	3
Air conditioning	3
Bunk beds	3
Carpeting in rooms	3
More vending machines	3

At Ballif (Table 11) a somewhat different set of improvements was suggested by students. The main suggestions, other than better soundproofing, were better room arrangements, better use of color, larger closets, carpeting rooms, larger rooms, and better lighting.

Better soundproofing was also the most mentioned improvement in Van Cott (Table 12). Suggestions by men were quite similar to Ballif's, but were ranked differently, i.e.: larger closets, larger rooms, and better lighting.

Behavior of Students in Residence Halls

Time allocation. The various activity pattern of students can be understood partially by analyzing the amount of time spent in different spaces within the halls. Table 13 shows the number of hours students report that they spend in six major spaces in a 24-hour day.

The average response indicated students spend almost three-fourths of a 24-hour day in the residence hall and over half of their time in their rooms. The average student spent almost an hour (0.8 hours) each day in the hallways (corridors), which is about the same amount of time spent in the main lounge.

When respondents were classified by sex, it was found that men spent 1.3 hours more per day in the halls and almost two hours more in their rooms. Yet, men spent slightly less time sleeping than women. Men also spent a half hour less per day in friends' rooms.

Women, on the other hand, not only spent less time than men in their own rooms; they also spent less time in recreation rooms. Women spent more time than men in their friends' rooms, in floor lounges, and in the main lounge.

Table 13

Daily Time Spent in Residence Halls

	Austin	Ballif	Van Cott	Men	Women	Double	Single	Grand Average
N =	(100)	(94)	(94)	(169)	(119)	(234)	(55)	(288)
Total Time in Halls: Number of Hours	19.2	15.9	16.8	17.8	16.5	17.6	16.7	17.3
Percent of 24-Hour Day	80.0%	66.2%	70.0%	74.1%	68.7%	73.3%	69.6%	72.0%
Total Hours:								
In Own Room	14.1	11.4	11.9	13.3	11.4	12.8	11.6	12.5
Sleeping	6.9	7.4	7.4	7.1	7.3	7.2	7.3	7.2
In Friend's Room	1.6	1.6	1.8	1.4	1.9	1.6	1.7	1.6
In Floor Lounge	1.1	1.4	0.9	1.1	1.2	1.2	1.1	1.2
In Recreation Room	0.6	0.3	0.7	0.5	0.4	0.5	0.5	0.5
In Main Lounge	0.9	0.5	0.7	0.7	0.8	0.7	0.9	0.8
In Hallways	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.8

A comparison may also be made of student usage of single and double rooms. Those who lived in single rooms spent slightly more time sleeping, more time in friends' rooms, in the main lounge, and in hallways. However, those who lived in double rooms spent a little more time (0.1 hour) in floor lounges and 1.2 hours more per day in their rooms.

Among the halls, Austin students spent significantly more time in the residence halls and in their rooms. They also spent slightly more time in corridors and main lounges. Interestingly, as a whole, they sleep half an hour less per day than the students in Ballif or Van Cott.

Ballif students spent the least amount of time in the hall, their rooms, recreation rooms, and the main lounge. They did spend more time in the floor lounge.

Van Cott students spent more time in friends' rooms and recreation rooms than others, but they spent the least amount of time in the floor lounge.

Study time allocation. Where students study and the relation of grades to hours of study is presented in Table 14. As a whole, about three-fourths of the average 26-hour weekly studying time was spent in students' rooms. An average of 2.4 hours per week was spent in the library and a little less than that in other places.

When comparing study time between single and doublt room occupants, the former studied 3.6 hours more per week; yet, they only spent half an hour more in their room. Most of these extra hours were spent in lounges, libraries, and places other then their own room. Their grades were slightly lower than those living in double rooms; but they were about a quarter more advanced academically.

Table 14

Weekly Studying Time and its Relationship to Year in University and Grade Point Average

N =	Austin (100)	Ballif (94)	Van Cott (94)	Men (169)	Women (119)	Double (234)	Single (55)	Grand Average (288)
Total Studying Hours Per Week	28.8	25.5	23.7	26.7	24.9	25.4	29.0	25.9
Studying Hours in:								
Own Room	19.5	18.9	19.1	19.5	18.7	19.1	19.5	19.2
	67%	74%	80%	73%	75%	75%	67%	74%
Lounges	1.6	0.9	1.2	1.0	1.6	1.1	2.0	1.2
Study Room	1.3	2.3	0.7	1.1	0.8	1.0	0.8	1.0
Library	3.2	1.1	1.7	2.6	2.1	2.2	3.5	2.4
Others	3.2	2.3	1.0	2.5	1.7	2.0	3.2	2.1
Grade Point Averages								
Winter 1967[a]	2.45	2.55	2.70	2.50	2.67	2.58	2.56	2.58
Spring 1966[b]	2.69	2.62	2.76	2.68	2.70	----	----	2.69
Years in University	2.3	1.8	1.6	2.0	1.8	1.8	2.1	1.9

[a] Self-reported in questionnaire

[b] Obtained from Residence Hall contract for Fall, 1966

In regard to sex differences, men studied 1.8 hours per week more than women. More time was spent by men in all five places for study, except for lounges. However, women did spend a larger percentage of their studying time in their own rooms.

Some interesting relations exist among halls. Austin students reported three hours more per week studying than Ballif students; and over five hours more than Van Cott students. Yet, they spent the least percentage of study time in their own rooms. In fact, they spent almost twice as much studying time in the library and other places than the students from the other two dorms. Academically, they were about two quarters more advanced.

Ballif students spent least amount of studying time in their rooms, lounges, and library.

The least amount of time for studying was spent by students from Van Cott. However, they did spend the most study time in their own room. They were as a whole the lowest class level among the three residence halls in school, but had the highest grade-point average.

Figure 11 presents a generalized time usage chart when Tables 13 and 14 are combined. As observed earlier, almost three-quarters of the students' time was spent in the residence hall and more than half of their time in the bedroom. It might also be noted that only about 16 percent of the time was used for studying.

Space utilization. Tables 15-17 present the percentage of men and women in each hall preferring various spaces for six types of activities. As mentioned earlier, the heavy usage of the hallway seems to be most unexpected. As many as one-third of the Austin women preferred the

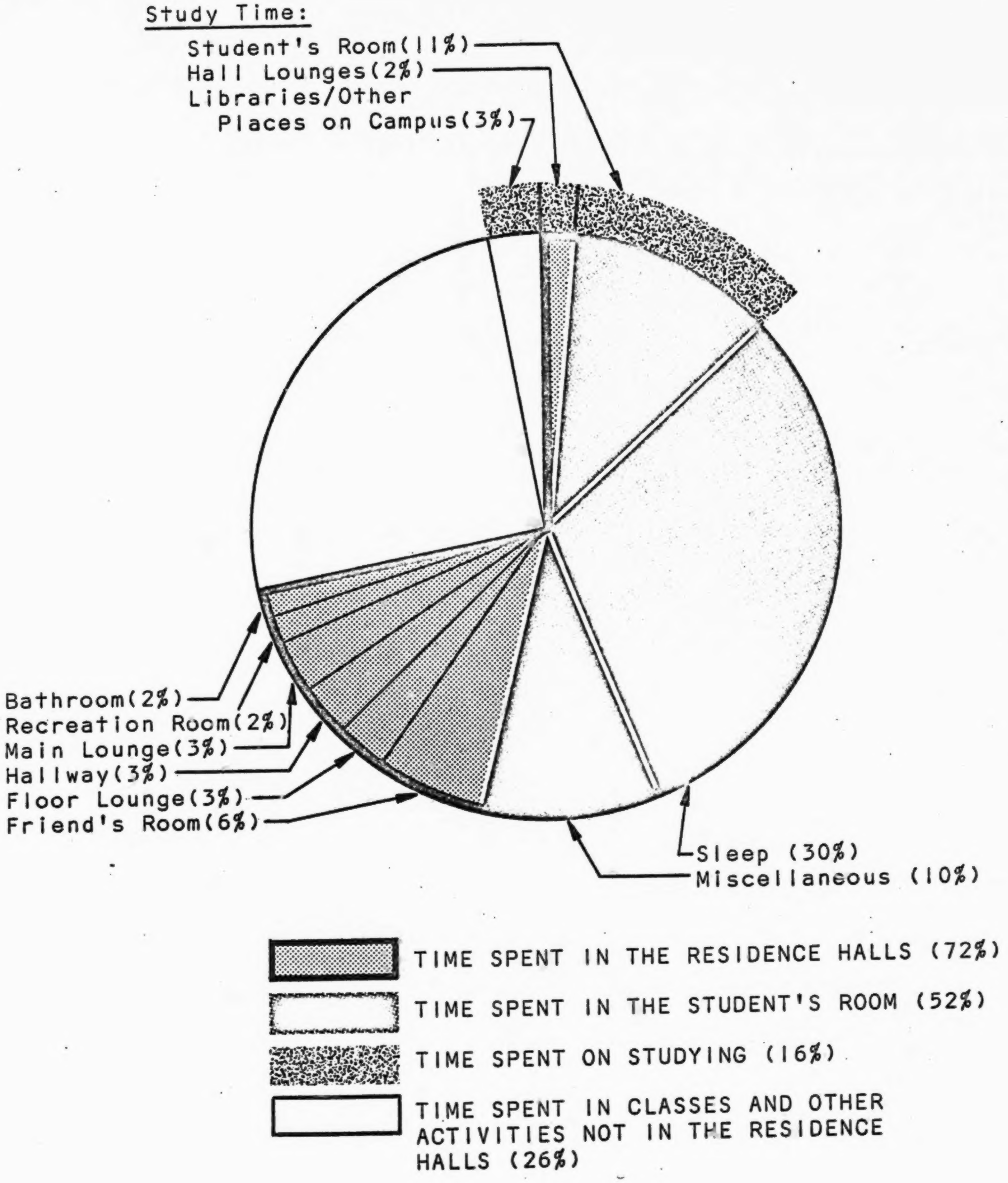


Fig. 11. Typical Use of Time in a 24-Hour Day.

Table 15[a]

Percentage of Men and Women Students in Austin Hall Using 7 Types of Space for 6 Types of Activities

Space Men (N=51) Activities	Own Room	Friend's Room	Corridor	Floor Lounge	Recreation Rm.	Main Lounge	Other Places
With Large group of Friends	10	10	6	38	4	8	4
With a Few Friends	36	58	20	30	12	20	8
With a Friend (Male)	28	30	12	10	8	2	4
With a Friend (Female)	6	4	2	2	2	14	8
To be Alone	62	2	16	6	4	2	8
Find Exciting and Interesting Things to Do	2	2	2	6	4	6	4
Women (N=28) Activities							
With Large Group of Friends	18	18	7	39	4	14	7
With a Few Friends	39	72	36	28	18	18	6
With a Friend (Male)	-	-	-	-	22	25	7
With a Friend (Female)	54	48	18	11	4	7	4
To be Alone	78	-	22	7	7	11	14
Find Exciting and Interesting Things to Do	4	7	-	4	4	11	14

[a] Tables 15-17 percentage represents the number of times each space was mentioned by the respondents. Multiple overlapping responses were possible so that totals generally do not equal 100%.

Table 16

Percentage of Men and Women Students in Ballif Hall Using

7 Types of Space for 6 Types of Activities

	Space						
Men (N=44) Activities	Own Room	Friend's Room	Corridor	Floor Lounge	Recreation Rm.	Main Lounge	Other Places
With Large group of Friends	6	11	6	18	11	18	15
With a Few Friends	47	59	27	45	13	22	15
With a Friend (Male)	50	34	13	11	6	9	6
With a Friend (Female)	-	-	-	-	4	25	13
To be Alone	68	4	18	27	2	6	13
Find Exciting and Interesting Things to Do	4	6	2	6	-	2	11
Women (N=27) Activities							
With Large Group of Friends	-	-	-	44	-	22	3
With a Few Friends	44	85	22	51	14	18	22
With a Friend (Male)	3	-	-	3	-	14	7
With a Friend (Female)	44	22	-	11	-	-	-
To be Alone	62	-	11	11	3	3	11
Find Exciting and Interesting Things to Do	-	-	3	11	3	7	-

Table 17

Percentage of Men and Women Students in Van Cott Hall Using 7 Types of Space for 6 Types of Activities

Men (N=27)	Space						
Activities	Own Room	Friend's Room	Corridor	Floor Lounge	Recreation Rm.	Main Lounge	Other Places
With Large Group of Friends	7	11	-	29	18	7	7
With a Few Friends	11	59	25	37	48	33	7
With a Friend (Male)	37	44	18	7	22	3	3
With a Friend (Female)	-	-	-	3	14	11	11
To be Alone	66	-	25	7	-	7	-
Find Exciting and Interesting Things to Do	-	7	3	3	11	7	7

Women (N-42) Activities	Own Room	Friend's Room	Corridor	Floor Lounge	Recreation Rm.	Main Lounge	Other Places
With Large Group of Friends	19	11	4	21	4	2	2
With a Few Friends	38	54	19	19	-	19	7
With a Friend (Male)	-	-	-	-	19	21	4
With a Friend (Female)	50	16	7	7	7	9	4
To be Alone	64	4	11	7	-	4	-
Find Exciting and Interesting Things to Do	7	-	4	4	-	-	2

hallway when they wanted to be with a few friends. When a student wanted to be alone, the hallway was the second choice for Austin and Van Cott, and third choice for Ballif.

In Austin, the preference of activities reported for each space indicates that fewer men were involved in activities than were women. To find excitement, men preferred to go to the main lounge or the floor lounge, while women preferred places other than the main lounge.

The Ballif floor lounges were heavily used by both sexes. The recreation rooms were least used, especially by women. To find excitement, Ballif men seemed to prefer places outside of the hall more often than facilities in the hall.

In Van Cott, the recreation room seems to have been very heavily used, especially by men; they almost dominate its usage. In finding something exciting to do, men preferred recreation rooms while women preferred their own rooms. Table 18 provides an over-all picture of how various spaces of the residence halls were preferred by students.

Expectations. Ratings on the extent to which the residence hall had lived up to students' expectations (Table 19) were found to be consistent with the overall rating scores. Such consistency was also found in ratings for men and women; women rated residence halls elements more favorably and agreed that residence halls more successfully lived up to their expectations.

Table 18

Preference Ranking of 7 Types of Spaces for

6 Different Activities by 288 Students

Type of Space Type of Activity	Own Room	Friend's Room	Hallway	Floor Lounge	Recreation Room	Main Lounge	Other Places
With Large Group of Friends	3	2	6	1	5	4	5
With a Few Friends	2	1	4	3	6	5	7
With a Friend (Same Sex)	1	2	3	4	5	6	7
With a Friend (Opposite Sex)	4	6	7	5	3	1	2
To be Alone	1	6	2	2	5	4	3
Find Exciting and Interesting Things to Do	5	4	6	2	4	3	1

Table 19

Extent Residence Halls Live up to Expectations and are Helpful in Fulfilling Needs

	All Students	Men	Women	Austin	Ballif	Van Cott
Extent Present Hall Lived up to Expectations[a]	2.49	2.60	2.33	2.56	2.72	2.18
Extent Present Hall Helpful to Following Needs:[b]						
Academic	3.24	3.19	3.32	3.25	3.47	3.01
Social	2.44	2.50	2.35	2.50	2.56	2.26
Recreational	2.77	2.72	2.86	2.77	2.91	2.65
Personal	2.63	2.66	2.60	2.60	2.88	2.43

[a] Five-point scale. (1=Most successfully, 5=Very Unsuccessfully)

[b] Five-point scale. (1=Very helpful, 5=Detrimental)

Need fulfillments. In the fulfillment of the four major needs as shown in Table 19, the academic needs fulfillment differed considerably from the other three needs. Residence Halls apparently were least helpful to academic needs, while they were somewhat helpful to social needs.

In terms of the extent to which each residence hall was helpful to the fulfillment of four major needs of students (Figure 12), Van Cott was considered more helpful than other halls in all four. Austin was somewhat less helpful than Van Cott, and Ballif was least helpful. These relations appear to be correlated with the previously mentioned mean rating scores of each hall (Fig. 8).

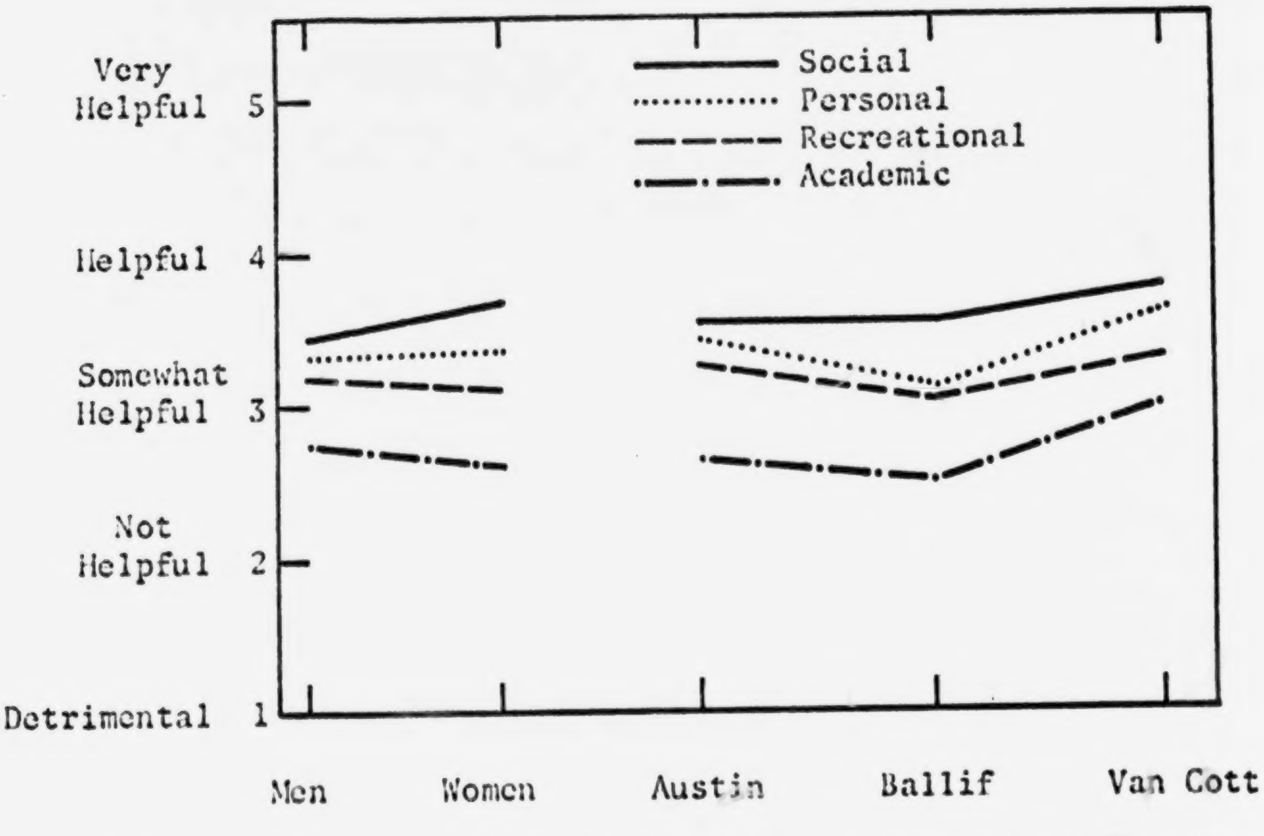


Fig. 12 Extent to which Residence Halls are helpful to the fulfillment of 4 general needs of students.

CHAPTER 4

DISCUSSION

The results of the questionnaires and their implications for residence-hall design are discussed in this chapter. Emphasis is first placed on the questionnaire results, with suggested improvements in residence-hall design and the methodology of this study. The second part discusses the physical and psycho-social considerations in the design of residence halls. The comments and recommendations made are based upon the questionnaire results, literature on student housing, students' suggestions (Appendix III), and the writer's supplementary observations (Figures 14-17).

Evaluation of Residence Halls

Student preference. How students react to residence halls was revealed by analyzing student preference in relation to five residence settings. Van Cott was the most sought-after hall with off-campus housing as second choice. Typically students named the hall they were living in as their first choice. The dissonant theory of attitude formation might explain this preference pattern. However, the second choice seemed to suggest the place students would really prefer. Both Austin and Ballif students selected Van Cott, and Van Cott students selected off-campus housing. The preference order quite likely indicated that off campus is the place most students would like to live; hence, residence halls are only a stepping stone for off-campus living. Partial support of this hypothesis can be seen in the decreasing number of upperclassmen and graduate students in residence halls shown in Figure 13.

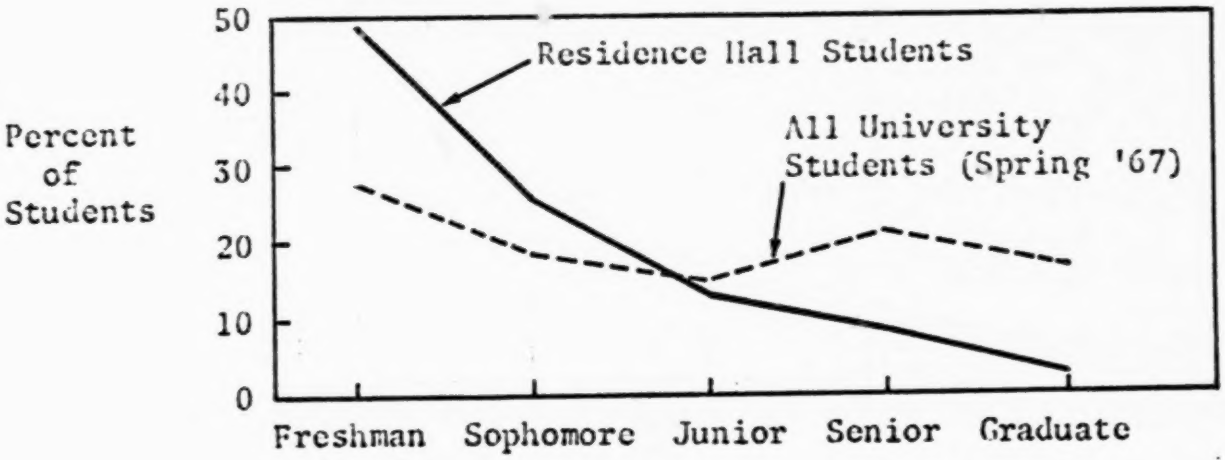


Fig. 13. Percent of Residence Hall Students versus all University Students in each class level.

After making the first three choices, most students, particularly men, selected Ballif as fourth choice and fraternity/sorority as last choice. Women, however, generally named Ballif as last choice.

Mean rating score. The fact that Van Cott was the most sought-after hall is consonant with the high rating score it received (83.71), against Austin's 73.46, and Ballif's 66.16 (Table 8).

It may be noted that Figure 8 shows that the different wings within a hall received uniform ratings; whereas between halls, the ratings differed. The conclusion, as supported by an analysis of variance, is that students in different halls gave different ratings to various elements of the hall, but within each hall, students tended to give very similar ratings.

Sex differences. Men and women tended to rate various elements within a hall in similar patterns. Men, however, usually gave lower ratings than women. The mean rating score on halls by men was 72.55, which is 4.24 points lower than the women's rating. A possible indication of men's low interest is the lower degree of involvement in social activities. Table 15 shows that a lower percentage of Austin men reported involvement in all six types of social activities than did women.

Women, on the other hand, were more involved and interested in the hall environment. The manner in which women answered the questionnaires demonstrated such interest. In most cases, the comments women made in the questionnaire were more detailed and diversified than those of the men.

However, in spite of the general high ratings women gave to most physical elements, their ratings were lower than men's on several of the elements, e.g., closet space, lighting, bathroom, bedroom size, and bedroom soundproofing (Figure 6). All of these, except for the bathroom, are elements in the bedroom; thus we may speculate that perhaps women are more critical of their bedroom surroundings.

Austin Hall. The mean rating scores (Figure 8) placed Austin as the middle-rated hall. It was also the second most popular choice among the three halls (Table 9).

An examination of the detailed profiles of the three halls also suggests Austin as second choice. Only two elements in Austin were rated higher than those of Van Cott, and only four elements were rated lower than those elements of Ballif. Among the 20 most pleasing features in all three halls (Figure 9), Austin led in six and shared first place in three with Van Cott. It may be concluded that Austin has several very successful features. The bathroom, the main lounge, and open court all were mentioned favorably by over 15 percent of the students. The open court seemed to be a controversial item although most items rated were not strongly so; it was considered pleasing by 15 percent of the Austin students, while 30 percent of them rated it annoying. The profile rating indicated it was considered just slightly below average. More students tended to like it now than before (in the pilot study), which suggests that students have become used to it. The major consistent problems of Austin are soundproofing, window size, and heating, which are all discussed later in the chapter.

Ballif Hall. Mean rating scores (Figure 8) indicated Ballif was the lowest-rated and least preferred hall. All but four of the elements in Ballif were rated lower than the other halls. In spite of its low rating, Ballif has several elements which are very desirable. It is located closest to the main campus and contains a dining hall; over 20 percent of its students considered its location pleasing. Ballif's bathrooms, which are shared by only eight students, were rated almost as high as Austin's. Probably the outstanding feature of Ballif was the small living group arrangement, where groups of eight students formed the basic group. Each group is closely located to another group on the same floor, forming a 16-student floor group. This gradual hierarchy of grouping was rated the sixth most pleasing feature among all 20 features listed in Figure 9.

Van Cott Hall. The profile of ratings on 24 elements of Van Cott again supported its high preference by students. Twenty of 24 elements of Van Cott were rated highest among all halls; only two received the lowest ratings. Another measure of Van Cott's popularity was the results from open-ended questions about pleasing and annoying features. Van Cott had 12 of the 20 most pleasant features in the halls. When compared with Austin and Ballif, Van Cott had the lowest percentage of students who offered suggestions. Perhaps Van Cott's students were more content with the existing facilities and had the least amount of complaints. Window size in Van Cott was clearly the single most outstanding feature among all residence-hall elements. It had the highest rating (1.42) among all elements (Figure 7) and the highese percentage (50 percent) of Van Cott students commented on its desirability. The windows run the length of the room (11 feet) and yield 44 square feet of window space (Table 1).

Suggested improvements for common problems. From the profiles of ratings (Figure 5), five of the lowest-rated elements in residence halls were singled out for analysis. Some suggested improvements based upon possible physical alteration of existing structure are indicated in Table 20.

Room sizes. The room sizes of the residence halls may well be a source of complaints. Room sizes were rated average and received little comment from the students. As Table 21 indicates, however, the room sizes in these halls are smaller than the national average of residence halls in both Canada and the United States.

Table 20

Source of and Corrective Measures for 5 Major Residence Hall Complaints

Complaints	Sources	Corrective Measures
Noise	Sound-transmitting walls, hallways, and air ducts. Hard, sound-reflecting wall and floor surfaces.	Extensive use of cork wall (which can double as tack board) and acoustic tile. Carpeting rooms and hallways. Double-swing glass doors used to block hallways into sections.
Heating	One thermostat for up to 30 rooms. Difficulty in controlling ventilation.	Use of individual room temperature control. Adjustable gates to control existing heating outlets. Air-conditioning for all halls.
Closet	Inadequate size. Lack of extra storage space.	Use of overhead or underbed space for additional storage space. Conversion of some basement space into extra clothing storage and hangers.
Recreation Facility	Interference between TV watching and other activities. Lack of individual recreation facilities.	Separation of TV area from recreation area. More individual recreation area. Provision for winter sports area near residence halls. Use of roofs for sun-bathing or sitting area. Indoor swimming pool in future additional halls.
Food Service	Mass-dining hall atmosphere. Lack of choice of food. Long waiting line at peak hours.	Partitioning dining hall into smaller sections of sizes to create more relaxed and intimate atmosphere. Fast-serving counters for eat-and-run eaters. Elimination of waiting lines going through the dining tables. Serving several optional courses per meal or letting students take as much and as varied as desired, but limited to one plate only. Staging picnics or luau more often. Combining meals with other events, such as dinners welcoming freshmen or farewells to seniors.

Table 21

A Square Footage Comparison of Room Sizes of University of Utah Residence Halls and the National Averages of United States and Canada

	Single Room	Double Room	Average Per Student
Austin[a]	67 sq. ft.	165 sq. ft.	76.0 sq. ft.
Ballif[a]	64 sq. ft.	145 sq. ft.	70.7 sq. ft.
Van Cott[a]	78[e] sq. ft.	167 sq. ft.	82.8[f] sq. ft.
United States[b]			106-112 sq. ft.
Canada[c]	117 sq. ft.	200 sq. ft.	108 sq. ft.
Expert Recommendation[d]	100 sq. ft.	200 sq. ft.	100 sq. ft.

[a] Based on Table 1 of this study. The measurements are based on architect's drawings and do not include closet space.

[b] Extracted from Riker (1961) Table 2.

[c] Bland and Schoenquer (1966).

[d] Riker (1965, p. 31).

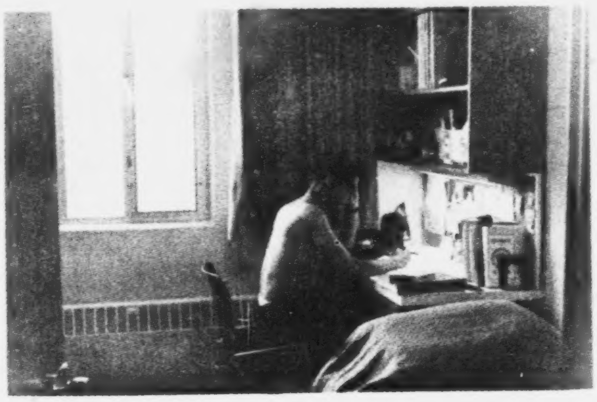
[e] Average single room size in Van Cott.

[f] C-Wing, apartment rooms not included.

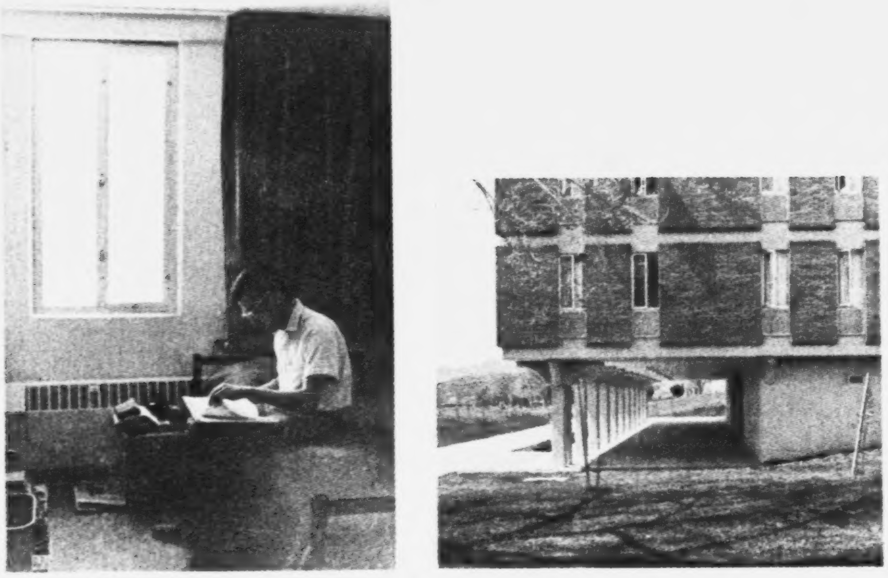
Austin Hall: 450 students live here; 300 men and 150 women.

Main lounge: the focal point of traffic and many activities; students rated it very favorably.

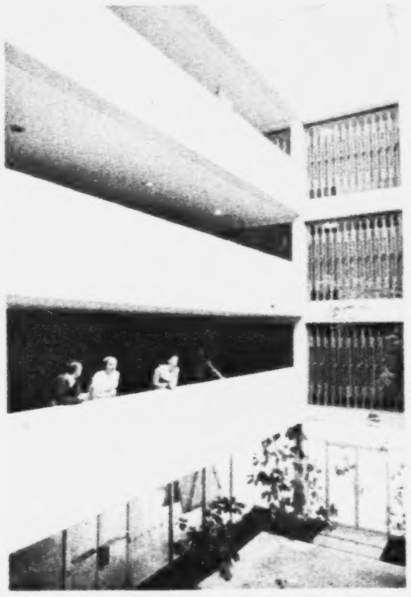
Floor lounge: off the hallway and opening into the open court; noise, traffic, and lack of privacy discouraged students from using it more often.



Heating: location and control of heater created a major problem. Note heater is located next to the study space. Heated air trapped under the desk caused further discomfort.



Window: narrow windows restricted views of outside; over 45% of students surveyed rated window as the most annoying element in Austin. Note its relation to building exterior.



Open court: all three floors open into the open court, causing noise and trash problem. Students called it the "Pit," "Garbage Can," or "Noise Chamber."

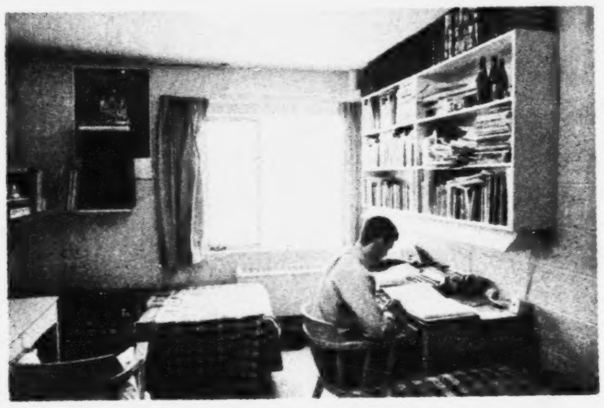
Figure 14. Some observations of Austin Residence Hall

Ballif Hall: 360 students live here; 240 men and 120 women.

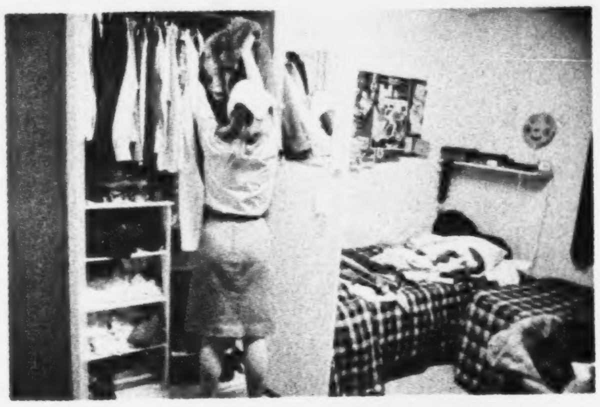
Main lounge: somewhat isolated, it can be entered only through one hallway. Students spent less time here than any other major space in the hall.

Floor lounge: 8 students shared this enclosed lounge-study. It was very favorably rated and was used more often than the lounges in other halls.

Dining hall: students liked the idea of having dining facilities in the hall but complained about the noise and the institutional atmosphere.



Room size: 73 sq. ft. per student made double rooms unusually crowded.

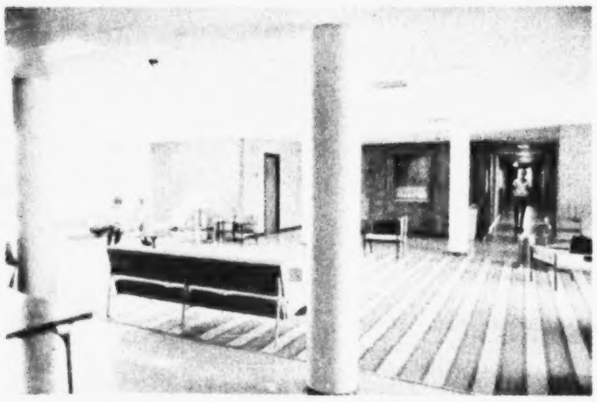


Closet space: inadequate closet space caused many complaints--especially by women.

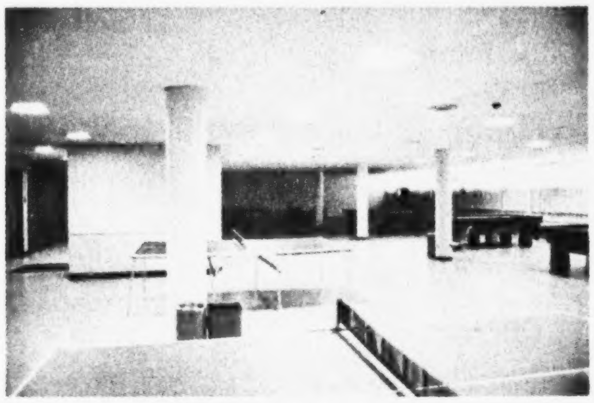
Figure 15. Some observations of Ballif Residence Hall

Van Cott Hall: 430 students live here; 160 men and 270 women.

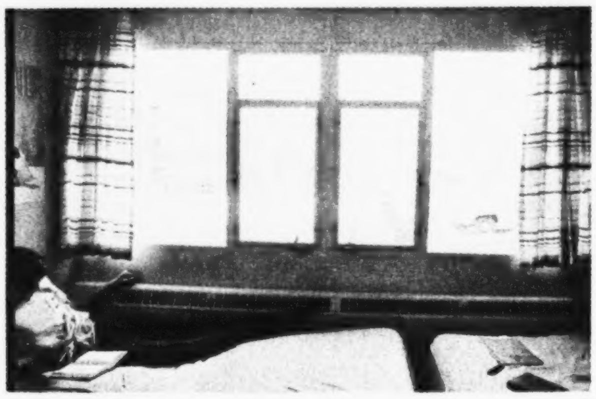
Main lounge: spaciousness, fireplace, patio and homely atmosphere made it a favorite gathering place.



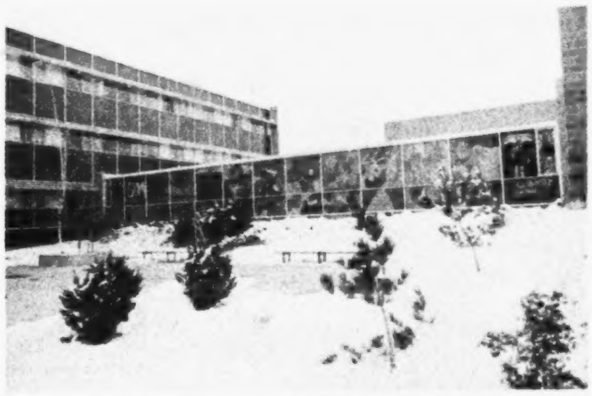
Floor lounge: traffic and lack of privacy discouraged more usage of it. Much space is wasted with two hallways running through it.



Recreation room: a favorite space for indoor activities.



Window: the most outstanding feature among all residence hall elements; it runs the length of the room (11 feet).



Creative expression: breezways between buildings were decorated by students to make the hall environment more pleasant.

Figure 16. Some observations of Van Cott Residence Hall

Student's room: a student spent at least half of his 24-hour day and more than 80 percent of his study time in his room. In general, men and those who shared room spent more time in their rooms than did women and those who lived alone.

Hallway interaction: much interaction took place in the hallways; even in the narrow Ballif hallway (three and half feet) students reported spending nearly one hour per day there talking or simply wandering. Poor lighting in the hallways often produce ghostly illusion of people,as shown in above figure.

A place to be alone: when a student wanted to be alone, aside from his own room, he preferred the hallway or the floor lounge--both are hardly ideal places for solitude because of traffic and noise.

Friend's room: a student would consider a friend's room, not his own room, as an usual place for group hang-out.

Heating problem: studying next to the heater and not able to adjust the temperature caused great discomfort to students.

Interference of activities: when TV was on, most other activities(ping-pong,chess, etc.) had to stop because of noise.

Figure 17. Some observations of students' behavior in residence halls

Behavior of Students in Residence Halls

Time allocation. Students reported spending three-fourths of their 24-hour day in the residence halls; the remaining one-fourth of their time was spent in classrooms, on campus, or in other places. Hence, there is reason to believe that the residence hall has considerable influence upon its residents. Also of importance was the student's room where he spent half of his 24-hour day. A typical student sleeps 7.2 hours, studies 2.7 hours, and spends the other 2.6 hours doing miscellaneous tasks in his own room. Quite unexpectedly, men reported spending almost two hours more per day in their rooms than did women. It may be speculated that men spend more time reading or pursuing some hobbies in their rooms. Women, on the other hand, are likely to be more socially oriented in as much as they spent more time in friends' rooms, floor lounges, and main lounges. Comparing time allocation between those who live in single rooms and double rooms, the students who live alone appeared to spend less time in their own room and more time in friends' rooms, main lounge, and even hallways; those who shared rooms spent almost an hour more in their rooms per day. Such findings were contrary to Van der Ryn's (1965) observation, that roommates tend to stay away from the room when the room was occupied. The different compositions of the student population may account for part of this discrepancy between findings.

Some relation of architectural space to time allocation was indicated in several cases. The main lounge in Austin was designed as a focal point of the hall traffic and also to provide space for some privacy. In Ballif, on the other hand, the main lounge is somewhat isolated and has only one entrance. The result was that students in Austin were spending half an hour more per day than Ballif students in their main lounge.

The floor lounge locations provided another example. In both Austin and Van Cott, the floor lounges are actually part of the hallways; noise, traffic, and lack of privacy discourage the use of these floor lounges. Ballif, on the other hand, has enclosed floor lounges the size of a comfortable living room and are being used more often than those of the other two halls. Students in Ballif, however, spent the least amount of time in the residence hall; this could be because Ballif is close to the central campus, because it has smaller rooms, or because it has a generally unattractive atmosphere. Ballif's students, however, still spent about the same amount of time in the hallways (corridors) as students did in the other two halls (0.8 hours).

The recreation room in Ballif is at best a ping-pong table-sized basement, and students only spent half as much time there as students in Austin or Van Cott.

Van Cott students, as a group the youngest, reported spending more time in friends' rooms and in the recreation room, whereas the older Austin students spent two hours more each day in their own rooms, perhaps reading but apparently not studying (Table 14).

Study time allocation. The finding that 67 to 80 percent of the study is done in the student's room corresponds with the percentage reported by Stoke (1960) and Sommer and Peterson (1966). The overall average of 74.1 percent, however, was higher than the 57% reported by students in our pilot questionnaire. Contributing to this discrepancy was the more detailed measure in the final questionnaire where the student was asked to list the percentage of study done in all possible places.

Students reported their mean total weekly study time to be 25.9 hours with a range between 23.7 (Van Cott) to 29.0 (single room students) hours. The minimum quarter requirement for a full-time undergraduate is 12 credit-hours and the rule of thumb is 3 hours of studying per week for each credit-hour; the reported number of mean weekly study hours was about 10 hours less than that recommended. A more precise measure, such as an activity log, would provide more accurate data on the study habits of students.

There is another aspect of study time allocation that needs further investigation. Students in all three halls spent about the same amount of time studying in their own rooms (mean of 19.2 and range from 18.7 to 19.5 hours per week); the difference was in the amount of studying time spent elsewhere.

The grade point average (GPA) of residence-hall students is comparable to that for all men and women undergraduates although slightly inferior to the GPA of fraternity and sorority students.[2] In the residence halls some inverse relation seems to exist between class level and grade point averages (Fig. 18). This is contrary to the relation in the student body generally. One may speculate that increasing academic demands make it more difficult for residence hall students to maintain grade point averages, and that this in turn causes many of them to move out of residence halls seeking a better study atmosphere.

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[2] In spring quarter, 1967, the grade point average for all undergraduate men was 2.50; for all undergraduate women, 2.63; for fraternities, 2.55, and for sororities, 2.79.

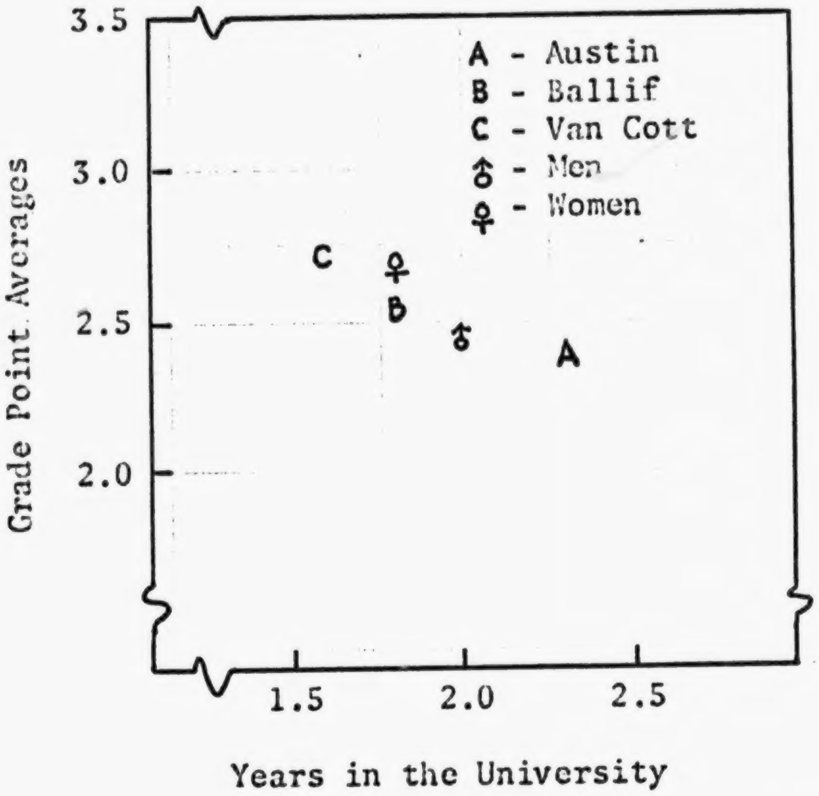

Fig. 18. Mean Grade Point Average Versus Mean Years at the University for Students According to Hall and Sex.

Preferred utilization of space. Several conclusions can be drawn regarding where students prefer to indulge in particular activities. As Table 18 shows, to be with large groups of friends, all students first preferred the floor lounge, then friends' rooms, and then their own rooms. The high preference for the main lounge by Ballif students may suggest that even though they spend less time in main lounge than Austin or Van Cott students, they consider the main lounge a place to be with large groups of friends. To be with a few friends, the students prefer friends' rooms first and their own rooms second. Privacy is perhaps more closely associated with a student's own room than his friends' rooms. We may speculate that the students consider their own rooms as personal environment and friends' rooms as group hang outs of the same nature as floor lounges.

To be with a friend of the same sex, a student is most likely to be in his own room, in a friend's room, or in the hallway. This may be why students spend 0.8 to 0.9 hours per day in the hallways (corridors), which are the channels of traffic between the student's own room and friends' rooms.

The most preferred place to be with a friend of the opposite sex is the main lounge; yet it is about the last place to be with a friend of the same sex. The presence of couples in main lounges is likely to discourage others from using it more often. Van Cott's recreation room is another highly-preferred place to be with a friend of the opposite sex, although it is more preferred by men than women.

For a student to be alone, aside from his own room, the floor lounge and the hallway were most preferred. Surprisingly, in Van Cott the hallway was the second choice among all places where students preferred to be alone. It is possible that only in the hallway can a student be alone, wandering around, and not be involved with any activity or confronting roommates.

One other observation made was that to find excitement and interesting things to do, students first chose places other than residence-hall facilities; the students' own rooms are about the last choice.

Expectations and need-fulfillment. Across the three residence halls similar ranking orders existed between the mean rating scores of architectural elements and the extent to which a hall fulfilled students' expectations. In other words, Van Cott students reported Van Cott lived up to their expectations more successfully than other students; they also rated the architectural elements to be better than other halls. Since this relation also holds true with both men and women, we may conclude that how successfully a residence hall lives up to the students' expectations corresponds with how its architectural elements are rated by its residents.

Of the four major needs surveyed, students considered that residence halls were most helpful in the fulfillment of social needs and least helpful for academic needs. The latter supports the notion that students move out of the residence hall mainly to look for better academic atmosphere. Men considered residence living more helpful to their recreation and academic needs than women did, while women felt their social needs were more successfully fulfilled by the halls.

From these relations, we may conclude that architectural elements in a residence hall influence how students feel about the extent residence halls live up to their expectations and the fulfillment of their major needs.

Questionnaire Methodology

The questionnaire was well received by the students. Many favorable comments by students were made (Appendix ii) and strong interest was shown in filling out the questionnaire.

The information obtained confirmed the notion that students react and behave differently in different residence-hall environments. Because of the survey nature of the questionnaire, the data provide at best only an over-view and a starting point for more systematic studies of residence-hall environment. In this section, the questionnaire methodology is reviewed, and additional studies are suggested.

The open-ended question provided a very helpful guide in terms of understanding the students' reaction to residence halls. Most students displayed high interest in responding to the questionnaire, and hoped that some improvements might be made. The comments of students provide another source of students' reaction to the questionnaire and the concern for improving the residence halls.

Even though questionnaires solicit only conscious reactions of respondents to environment (Sommer, 1966), results from this study indicate that some inferences can be made about many less obvious aspects of student reaction. Eysenck and Eysenck (1962) concluded that questionnaires can obtain the same degree of response as interviews.

Unfavorable comments from students pertained to two aspects of the questionnaire: it was too personal, particularly about family income and self-rated personality characteristics, and too repetitive. The latter comment was not unjustified, since many repetitive measures were deliberately included to reveal some consistently-mentioned pleasing and annoying elements in the halls.

Additional studies. To verify findings in this study and to examine less obvious reactions to the residence hall environment, several additional studies are suggested:

1. Organize students by concordance data program, to examine trends and relations between comments.

2. Factor analyze all variables in the present questionnaire to determine variables with high-loading value.

3. Re-examine data from students of different class standing, or single and double rooms to determine differences between these students.

4. Make comparative studies by surveying residence halls of other universities using the same questionnaire.

5. Do more observation studies, e.g., behavioral mapping, activity logging, etc., to validate findings of this study.

6. Give this same questionnaire to students who have never lived in residence halls and those who have moved out of halls in order to determine any before-after effects.

Implications for Designing Residence Halls

The present study examined three examples of traditional residence-hall environments; the significance of such examinations rests in the fact that it serves as a vantage point to look into the future of residence-hall design. The rapid technological advancement and the drastic changes in social values in the coming years indicate the inadequacies of traditional approach to student housing problems. Revolutionary design concepts are taking place in today's educational buildings, due partly to new concepts and new innovations, such as team teaching and closed-circuit television. It is reasonable to speculate that the coming years will also demand revolutionary changes in student housing. This section offers some considerations concerning the physical and psycho-social aspects of residence-hall design.

Physical Considerations

A. Immediate environment. In a residence-hall environment, the student's room is the most immediate space around him and possibly has the most influence on the student's well-being. It is the space in which a student spends more of his time than anywhere else, at least half of his 24-hour day and more than 80 percent of his study time. Furthermore, it is the place where the student can drop the public role and be himself. His room is his "home away from home," where he may find the security and protection he misses from home.

1. In designing residence halls, primary attention must be given to the student's room. Van der Ryn (1965) suggested that the key element in dormitory design is the student's room. Results from this study supported the need for primary concern for the immediate environment; the student's room contains 13 or the 20 most annoying elements and 3 of the 5 most needed improvements suggested by students in the residence halls.

2. There is a growing demand for single rooms, caused mainly by the fact that more children have been brought up having their own bedrooms at home (Riker, 1961). Also, recently a great deal of concern is raised among educators and sociologists about the privacy-deprivation effect in room sharing. Single rooms provide freedom, privacy, and a place the student can call his own. A psychological divider already exists between two halves of double rooms. It might be helpful to partition parts of the double room to provide some visual privacy and perhaps reduce the "infringement" problem.

3. There is a trend toward more built-in room furnishings in residence halls. Built-in furniture reduces the flexibility of room arrangement, flexibility which students prefer, but properly designed built-ins can minimize the space preempted for essential activities such as bed, closets, and study space. More remaining free space then is available for students to exercise their own creativity or idiosyncracy.

4. The size of windows has an important role in the student's room. In naming the most pleasing and most annoying features in the halls, the windows were mentioned most often. The largest windows were rated most favorably, particularly because they command a magnificant view of the hills and the valley. When windows are so designed that they restrict such views, as in Austin, they are rated most annoying by students.[3]

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[3] It may be noted that Figure 9 shows no one in Austin considered the small windows pleasing, and yet, similar small windows were adopted in almost all buildings at the new Irvine campus of the University of California.

5. Study space should be reasonably isolated and separated in the room. Since roommates seldom have the same schedule, rooms should be designed so studying and sleeping by roommates will not interfere with each other. Individual study carrels in the room or in the residence hall may be used to promote better study environments. Curtains or partitions around the bed or between the halves of double rooms should reduce the interference and distraction of the activities of roommates. Attention to muffling typewriter, radio, TV, and other sources of noise would seem called for.

B. Intermediate environment. Beyond the immediate environment of the student's room and usually within the floor area of a residence hall is the intermediate environment. This intermediate environment is transitional in nature, for it connects the student's room to the residence hall atmosphere and provides circulation spaces for the students. It is also serviceable in nature; bathrooms, floor lounges, and other student rooms attend certain needs of the students.

1. The ideal number of students forming such an intermediate environment should be varied according to circumstances and the nature of the student population. The favorable reaction of Ballif students to their eight-student grouping suggested that between 6 to 10 students per group might be ideal. Such grouping provides a high degree of interaction between students; it also facilitates the student's identification with residence halls. Architecturally, a floor in the residence hall can consist of several such small groups; by exposure to proper organization of such groupings, a student can more easily find his role in the halls.

2. In the arrangement of student rooms, the hallway plan is the most common and the least satisfactory design. Long, narrow, straight hallways are one of the main elements contributing to the "institutional look." This study found that students use the hallway for various activities quite frequently, in fact, as often as the floor lounges. Even in very narrow hallways, as in Ballif (3'6"), students still reported much usage. More creative designs, such as suite plans, curve design, or "pod" design should facilitate closer student association and more convenient access to various spaces in the residence hall.

3. Study facilities should be separated from other functions prevailing in the halls, e.g., recreational, and social. The interference and distraction in the student's room render it less than ideal as an environment for studying. A place exclusively for study is needed within the residence hall. Individual study carrels can be provided in quiet study rooms in each floor. The dining hall can also be used as an evening study room.

C. General environment. The general environment of a residence hall encompasses its exterior, landscaping, main lounge, and lobby. These elements together usually set the tone for the hall atmosphere and relate the residents to the campus community.

1. The main lounge and the entrance lobby are important factors in promoting or reducing the "institutional look." Such spaces designed for large, formal activities often are seldom used wasted space; this study found the main lounge to be one of the least used spaces in the residence halls. In fulfilling more personalized student needs, the need is toward informal, small groupings of main lounge

environment. A few small, partitioned spaces for multiple usage may be more practical than one large open main lounge. These should be designed so that students will use them and not be made to feel that they are performing on a stage.

2. The landscaping of a residence hall compliments its interior atmosphere. Spaces such as gardens and courtyards can promote more relaxed outdoor recreational and social activities.

Psycho-Social Considerations

The nature of students in residence halls varies a great deal because the geographic location and academic structure of a particular university. Understanding the nature of a particular group of students will help architects design suitable living quarters for them. As Dreyfuss (1955) worded it: "people reflect the environment and atmosphere in which they are placed." In designing residence halls to enhance human dignity and comfort, several psychological considerations are to be kept in mind.

1. Careful attention must be given to individual student needs, so that proper functioning of the students can be enhanced. In a building designed for people, provision for proper functioning of the human beings is the primary aim; the proper functioning of the mechanical and aesthetic elements contributes to this end. Constant surveillance of the satisfaction of students' needs is necessary. For example, at the University of Utah about half of the residence hall students are from rural areas, while the other half are from urban centers. In a few years this proportion may change drastically. The nature and needs of these rural students may differ a great deal from

those of an urban-centered university, such as the Berkeley campus of the University of California.

2. The different needs of men and women must be considered in designing residence halls for them. By 1970, about half of the resident college students will be women. Traditionally the rule of thumb is to give women six percent more space per room. It should be noted here that perhaps the real need is not more room space, but more closet and storage space. Dating needs of women require more attention than men's; women need places to entertain their dates or guests. Space must be provided in residence halls for dates to have some privacy. On the other hand, men appear to want more exercise space and more recreational facilities.

3. Residence halls are playing an increasingly important role in educational programs. Closed circuit TV and in-hall classrooms are drastically changing the atmosphere of residence halls; the adjustment students must make to accommodate these changes are of vital importance to their campus life. Residence halls should be designed to facilitate these changes and adjustments.

4. The residence hall student is a growing person, growing physically and mentally, maturing from a teenage world to an adult world. College years are the short interval between home and the "outside" world. A residence hall provides certain needed security and protection in this transitional state--in other words, a psychological home.

5. Obsolescence is a major consideration, since residence halls are built to house students for at least forty or fifty years. At the

University of Virginia, the favorite residence hall today is the hall designed by Thomas Jefferson in the early 1800's; and yet at the University of Utah many students are already finding numerous features of the twelve-year-old Ballif Hall obsolete. Architects and designers must be made aware of the effect of changing times on student housing. In the coming years how will phenomena such as happenings, hippies, and other evolving attitudes of present-day youth influence the design of residence halls which will also accommodate the needs of tomorrow's students?

CHAPTER 5

SUMMARY

How students function in residence halls and how residence-hall environment affect students is the main concern of this study. The major areas of investigation have been: (1) to identify the architectural elements in each residence hall which are liked or disliked by its students; (2) to learn how students use their time and various spaces in the residence halls; (3) to learn how students' major needs are fulfilled by living in the residence halls; and (4) to formulate some guidelines for designing residence halls.

Two hundred eighty-eight residents of the three co-educational residence halls at the University of Utah completed a four-page questionnaire evaluating 24 physical elements of the residence halls and reporting their own time allocation, space, utilization, study patterns, and need-fulfillment.

Evaluations of Residence Halls

1. Students in different residence halls gave different ratings to the physical elements of each hall, but within each hall students residing in different wings did not rate them differently.

2. Men and women tended to rate physical elements in similar patterns. However, men usually gave lower ratings than women. Women were more critical toward their bedroom surroundings, i.e., closet space, lighting, bathroom, bedroom size, and soundproofing.

3. The combined rating scores of 24 physical elements in each residence hall corresponded with the preferences reported by students.

Students most preferred the hall they were residing in. Off-campus living was the second choice and seemed to be the direction most students were hoping to move.

4. Each of the three halls had its own successful and unsuccessful physical elements, as rated by students. The most highly-rated element in all halls was the abundance of window area in one of the halls (Van Cott). Five of the lowest-rated elements were soundproofing, heating, closet space, recreation room, and food service.

Students' Behavior in Residence Hall

1. Three-fourth of the students' 24-hour day was spent within the residence-hall environment. The most used space was the bedroom, in which the student spent 12.5 hours per day. Men spent 1.9 hours more per day in their rooms than women. Students who shared rooms with another student spent 1.2 hours more per day in their rooms than those who lived alone.

2. A mean of 25.9 hours of total weekly study time per student was reported. Of this study time, 74 percent was done in the students' rooms. Students in all three halls spent about the same amount of time studying in their rooms; the difference was in the amount of study time spent elsewhere.

3. Several conclusions could be drawn from students' statements of preferred space in which to engage in particular activities. When a student wanted to be alone (outside his own room), he preferred either the floor lounge or the hallway (corridor). To find exciting and interesting things to do, students chose places other than residence halls; their own rooms were the last choice.

4. The extent to which a residence hall lived up to the expectations of its students corresponded with the combined rating scores students gave to the physical elements of the halls.

5. Of the four major needs of students (academic, social, personal, and recreational), students considered that living in residence halls was most helpful in fulfilling social needs and least helpful for academic needs.

This comparative study has been an exploratory investigation into how students evaluate residence halls and behave in them. A wide range of useful information was obtained by the questionnaire. Critical areas in residence halls affecting the well-being of students were disclosed and analyzed. Improvements to these problem areas as well as further research in residence-hall environment were suggested.

REFERENCES

American Institute of Architects, College housing, September-October, 1956, 10, (5), 139.

Bailey, R. P. Does dorm-dwelling provide ideal college life? Wisconsin Journal of Education, May, 1958, 90, 10-12.

Bland, J., & Schoenquer, N. University housing in Canada. Montreal: McGill University Press, 1966.

Broxton, June A. A method of predicting roommate compatability for college freshmen. Journal of National Association Women Deans and Counselors, June, 1962, 25, 1969-1974.

Bush-Brown, A. Dormitory design: economical housing isn't enough. Apartments and dormitories. Architectural Record (ed), New York: F. W. Dodge, 1957, 176-178.

Clark, B. R., & Trow, M. Determinants of college students subcultures. Unpublished mimeographed paper, Center for the Study of Higher Education, University of California, Berkeley, 1964.

Clark, D. L. Exploring behavior in men's residence halls using the MMPI. Personnel and Guidance Journal, 1964, 43, 249-251.

Cornell University, The don'ts in dorm planning. Ithaca, New York: Cornell University News Bureau, 1963.

Dreyfuss, H. Designing for people. New York: Simon and Schuster, 1965.

Eastman, M. The wisdom of Confucius. Great lives, great deeds. Springfield, Illinois: The reader's Digest Association, 1964.

Educational Facilities Laboratories, Bricks and mortarboards. New York: Author, 1964, 7, 102.

Eysenck, K. J., & Eysenck, S. B. G. A factorial study of an interview-questionnaire. Journal of Clinical Psychology, 1962, 18 (5), 275-282.

Fairchild, Ellen. Current problems and programs in residence halls. Journal of National Association Women Deans and Counselors, April, 1961, 24, 144-149.

Freedman, M. B. The passage through college. Journal Social Issues, 1956, 12, (4).

Gardner, Evelyn. The sociology of residence halls. *Journal of National Association Women Deans and Counselors*, January, 1957, *20*, 51-57.

Greenleaf, Elizabeth A. Co-educational residence halls: an evaluation. *Journal of National Association Women Deans and Counselors*, April, 1962, *25*, 51-57.

Hall, R. L., & Willerman, B. The educational influence of dormitory roommate. *Sociometry*, 1963, *26*, 294-318.

Jacobson, T. L., Price, P. B., de Mik, G. H., and Taylor, C. W. *An exploratory study of predictors of physician performance*. Salt Lake City: University of Utah, 1965.

Li, J. C. R. *Statistical inference*. Ann Arbor, Michigan: Edwards Brothers, 1966.

Matson, R. E. A study of the influence of fraternity, residence hall and off-campus living on students of high, average, and low college potential. *Journal of National Association Women Deans and Counselors*, April 1964, *26*, 24-29.

Morales, J. Noise in a U. C. men's dormitory. Unpublished paper, University of California, Berkeley, 1965.

Morison, S. E. *The founding of Harvard College*. Cambridge: Harvard University Press, 1936.

Newcomb, T. M. The prediction of interpersonal attraction. *American Psychologist*, 1956, *2*, 575-586.

Perry, Ellen. How do you like your eggs? *Progressive Architecture*, December, 1965, 132-135.

Rashdall, Hastings. *The universities of Europe in the middle ages*. Rev. Ed. by F.M. Powicke and A. B. Emden. Oxford: Clarendon Press, 1936, *V*, 11.

Riker, H. C. *College students live here*. New York: Educational Facilities Laboratories, 1961.

Riker, H. C. *College housing as learning centers*. Student Personnel Series No. 3. Washington D. C.: The American College Personnel Association, 1965.

Schachner, Nathan. *Medieval universities*. Frederick A. Stokes, 1938.

Sommer, R., & Peterson, Peggy. Study carrels re-examined. Mimeographed paper supplied by the authors, 1966.

Stewart, Helen Q. *Some social aspects of residence halls for college women.* New York: Professional and Technical Press, 1942.

Stoke, S. M. *Student reactions to study facilities.* Amherst, Massachusetts: The Committee for New College, 1960.

University of Utah, *Growth: a University of Utah responsibility report.* Salt Lake City: University of Utah Press, 1967.

Van der Ryn, S. The ecology of student housing: a case study in environmental analysis and design. Working Paper Series, Institute of Urban and Regional Development, University of California, Berkeley, September, 1965.

Watson, R. I. *The great psychologists: from Aristotle to Freud.* New York: Lippincott, 1963.

Williamson, E. G., Layton, W. L., and Smoke, M. L. *A study of participation in college activities.* Minneapolis: University of Minnesota Press, 1954, 98.

Wohlwill, J. F. The physical environment: a problem for a psychology of stimulation. *Journal Social Issues*, 1966, *22* (4), 29-37.

Zajone, R. B. Social facilitation. Science, 1965, *149*, 269-274.

APPENDIX 1

QUESTIONNAIRE

Dear Resident:

Residence hall living is an important part of your college life.

We are interested in how you feel about the various aspects of this hall. You and a number of the residents in the hall are selected to fill out this questionnaire we have prepared.

We would appreciate your cooperation and suggestions, for your comments will be very valuable in helping us design better residence halls.

After you have filled out the questionnaire, be sure to return it to your SA by eight p.m. Sunday.

Thank you.

RESIDENCE HALL QUESTIONNAIRE

This questionnaire is part of an extensive study to survey students' views on the residence hall environment and specifically the architectural elements of this hall.

We would appreciate your cooperation in filling out the following questions and rating the many physical elements of this hall. As you are most familiar with the living spaces and features of this building, your suggestions and comments will be very helpful in providing information to design other residence halls. The information is confidential, so you are free to express any observations, criticisms, ideas, and suggestions. Please do NOT write your name.

Part 1. GENERAL INFORMATION: Check or fill out the appropriate parenthesis ( ).

1. Residence Hall...Austin ( ); Ballif ( ); Van Cott ( ).

2. Wing.............A ( ); B ( ); C or Apt. ( ); D ( ); E ( ); F ( ); G ( ).

3. Floor...........First ( ); Second ( ); Third ( ).

4. Sex.............Male ( ); Female ( ).

5. Type of Room.....Single ( ); Double ( ); Apartment ( ).

6. Class Standing...Fresh. ( ); Soph. ( ); Jr. ( ); Sr. ( ); Grad. ( ).

7. Grade point average last quarter: ( ).

8. Your major: ( ).

9. Home State: Utah ( ); Other State: specify ( ). Foreign Country ( ).

10. Number of quarters in this hall...............( ).

11. Number of quarters in other halls on campus...( ).

12. Number of quarters lived away from home.......( ).

13. Where did you live just before moving in the residence halls: Single House ( ); 2 to 4 Unit Apt. ( ); More than 5 unit Apt. ( ); Others: specify ( ).

14. What size community are you from based on population?
    Over 500,000 Pop. ( ); 5,000 to 10,000 Pop. ( );
    100,000 to 500,000 Pop. ( ); 1,000 to 5,000 Pop. ( );
    10,000 to 100,000 Pop. ( ); less than 1,000 Pop. ( ).

15. How successfully has this hall lived up to your expectations?
    - ( ) Very successfully
    - ( ) Successfully
    - ( ) Neither successfully nor unsuccessfully
    - ( ) Unsuccessfully
    - ( ) Very unsuccessfully

16. To what extent has living in this hall been helpful to you in the following respects?
    Check the ( ) along each area that best describes your judgment.

	Very Helpful	Helpful	Somewhat Helpful	Not Helpful	Detrimental
a. Academic needs....	( )	( )	( )	( )	( )
b. Social needs......	( )	( )	( )	( )	( )
c. Personal needs....	( )	( )	( )	( )	( )
d. Recreational needs	( )	( )	( )	( )	( )

Part II. Rate the following features of this hall by your personal observation. Mark an X in the proper space. (1. excellent; 2. fair; 3. average; 4. poor; 5. very poor.)

Bedroom 1 2 3 4 5 Write comments you may have for any item
1. size.............______________________________
2. closet space......______________________________
3. study space.......______________________________
4. window size.......______________________________
5. arrangement.......______________________________
Furnishing ______
6. your room.........______________________________
7. lounge area.......______________________________
8. main lounge.......______________________________
Soundproofing ______
9. in rooms..........______________________________
10. in hallway........______________________________
Lounge area ______
11. arrangement.......______________________________
12. space usage.......______________________________
13. central garden....______________________________
(Austin only) ______
14. recreation room...______________________________
15. bathroom..........______________________________
16. laundry room......______________________________
17. use of color......______________________________
18. overall floor layout..........______________________________
19. architectural design..........______________________________
20. location..........______________________________
21. heating system....______________________________
22. lighting..........______________________________
23. food service......______________________________
24. overall evaluation of facilities...______________________________

25. Name facilities which are not in your hall now but which you fel would be important for enjoyable campus living.

a.______________________ d.______________________

b.______________________ e.______________________

c.______________________ f.______________________

26. Write down the number of hours per day you usually spend in each of the places within this hall. (If less than an hour, use 1/4 or 1/2 hour increments.)

Your room.....(Hrs.)__________
Friend's room (Hrs.)__________
Hallway.......(Hrs.)__________
Floor lounge..(Hrs.)__________
Recreation room (Hrs.)__________
Main lounge.....(Hrs.)__________
Other ( )(Hrs.)__________
Other ( )(Hrs.)__________

27. On the blank line following each place listed above, write each of the letters representing the activities listed below which you usually do in each place:

(a) Be with large group of friends
(b) Be with a few friends
(c) Be with a friend (Male)
(d) Be with a friend (Female)
(e) Be by yourself
(f) Find exciting and interesting things to do

28. How many hours per day do you usually sleep?
In your room (Hrs.)__________Other places ( ) specify__________

29. Estimate the number of hours per week you study in each of the following places:

a. Your room ....( )Hrs.
b. Dorm lounge...( )Hrs.
c. Study lounge ( ) Hrs.
d. Library..... ( ) Hrs.
e. Other places? ( )Hrs. Specify where: (

30. Assuming you were to select your living quarters now, rank the following choices from 1 (most preferred) to 5 (least preferred). Indicate your reasons for 1 and 5 only.

Your reasons

( ) Austin ....__________________________
( ) Ballif...........__________________________
( ) Van Cott..........__________________________
( ) Off campus........__________________________
( ) Frat./Soro. House __________________________

Part III. Biographical information:

1. Father's Education: (   ) 2. Father's Vocation: (   )

3. Mother's Education: (   ) 4. Mother's Vocation: (   )

5. Total annual family income(   )dollars per year.

Rate yourself on each of the traits listed below in regard to how you see yourself. Check the ( ) that you feel best describes yourself at the present time.

		very high	high	average	slightly below average	low
6.	Emotional stability	( )	( )	( )	( )	( )
7.	Leadership	( )	( )	( )	( )	( )
8.	Popularity	( )	( )	( )	( )	( )
9.	Dependability	( )	( )	( )	( )	( )
10.	Drive to achieve	( )	( )	( )	( )	( )
11.	Sociability	( )	( )	( )	( )	( )
12.	Aggressiveness	( )	( )	( )	( )	( )
13.	Self-control	( )	( )	( )	( )	( )
14.	Self-understanding	( )	( )	( )	( )	( )
15.	Perseverance	( )	( )	( )	( )	( )
16.	Adaptability	( )	( )	( )	( )	( )
17.	Sensitivity to surroundings	( )	( )	( )	( )	( )
18.	Originality	( )	( )	( )	( )	( )

If you could talk to the architect about this hall, what would you tell him?

19. About physical features that please you most? (List in order of preference.)

20. About physical features that annoy you most? (List in order of annoyance.)

21. About other general aspects of this hall most satisfactory to you?

22. About other general aspects of this least satisfactory to you.

23. From the above questions, what improvements would you suggest to the architect to make this hall more comfortable for you. Suggest as many as you can.

What are your comments about this questionnaire? (Optional)

Please return this to your SA as soon as possible. The result of this study will be available to you after June at the Housing Office. Thank you for your cooperation and time.

APPENDIX II

SELECTED COMMENTS BY STUDENTS ON QUESTIONNAIRE

The reactions of students to the questionnaire can be interpreted through their comments. The comments also provide valuable information on the methodology and usefulness of the questionnaire. Two-thirds of all respondents voluntarily made comments; a fourth of the comments are listed below for their representativeness. The comments tend to cluster in four major groups: (1) enthusiastic and favorable comments; (2) favorable comments with some reservations or demand for "action"; (3) doubting or questioning comments; (4) unfavorable comments with some resentment or dissatisfaction about the questionnaire.

Group One

> This is great...somebody cares enough what the resident thinks to get his opinion before planning any new dorms.
>
> It's great! It should have been done a long time ago and on other things too. It's about the first time that the students living in the dorms have been questioned about their life there.
>
> I'm glad somebody is finally doing something about Ballif. It isn't that bad a place to live, but three quarters get on your nerves.
>
> For the Housing Director in planning adequate and necessary facilities the questionnaire is highly satisfactory. This makes the student aware that their opinions are useful and needed.
>
> I think it is a very good idea. This is the only way, perhaps, that we can get something done without taking drastic measures.
>
> The questionnaire is very comprehensive. It was a good questionnaire because it asked pertinent questions.
>
> Well formulated.
>
> Very comprehensive, thought it was very good.

Fairly objective.

Thorough!

Practical and helpful.

This is the best way to collect news.

I am glad you're trying to improve the dorms.

Well-written and significant.

Keep the faith, baby.

Group Two

Long overdue. Hope it brings results in time for next year's poor, unsuspecting students.

I feel it was valuable--rather it could be valuable. It was a good innovation. I hope the administration takes it to heart.

The use of a questionnaire of this type is a very good idea, if taken into consideration before the next dorms are built.

Please use the suggestions.

It is a good idea if you will really take an interest and listen to the complaints and do something about them. This I doubt!

Glad to have a chance to comment. But generally, the residence halls facilities have improved each year I've lived here.

Well, it's nice to know somebody cares, but I very much doubt that any improvement will come of it.

I just hope we get some ACTION!! It was a good idea if something is done.

I appreciate the show of concern on the part of the administration. Hope some improvements can be made.

Thank you for letting me have a chance to air my complaints with, at least, a small hope that someone may take heed.

I would like to see a questionnaire like this on the staff, recreation activities, food service, standards board, government, and maid-janitor staff.

I think this is a very good idea if it is used and applied, instead of thrown in the waste basket or filed away. If it's given careful consideration due it, it will help a lot. Thank you.

Hope that the comments expressed by students are given serious study and merit. I think it's a good thing that someone is concerned with improving the dorms.

Very good. Hope the follow through is as excellent. I believe you have been very thorough.

It is very good for the most part. My parent's income, though, is nobody's business. If this promotes some action, it will be excellent and extremely beneficial.

If this questionnaire is to be used to help in the design of a new dormitory, then I feel it is worthwhile, but if it is to be disregarded, it is waste of time for all.

If it is read, perhaps it will prove worthwhile.

OK if they'll take some suggestions.

Questions with answers are necessary for improvement--thus I appreciate the questionnaire's apparent interest.

If suggestions are considered, this could be very significant.

Questions could be consolidated! But it's good to know people will accept suggestions.

If you'll use the information in bettering the dorm it is fine.

Group Three

Will it do any good?

What's it for? I hope it serves in getting some changes made.

It is probably a waste of my time, for I feel that none of these suggestions or remarks will be taken into consideration.

What will if accomplish? It's too personal.

What is the value of it? Surely you're not going to build more dorms. With the out-of-state tuition going up, who is going to fill them?

There's not too much that can be done to change the basic architecture of this building right now, so many questions seem bothersome to fill out.

What are you, a psychoanalyst?

Rather a psychiatrist's test instead. Might as well put down names--it will be very easy to match. You'd better learn the art of questionnaire making. People don't like to spend a lot of time.

Have you considered architectural psychology?

Group Four

I don't see why family income should be brought up, but I don't mind if it'll help.

The questionnaire was fine as far as the questions about the architecture of the building, but my personality and father's education and income have no bearing on the subject. Those questions are merely intruding. If they do have some value, please include an explanation with the results.

Questions as those about family income aren't any of your business.

Too personal.

Too personal. Questions, like the self-rate one, do not seem related to improving the "architecture."

Too nosey.

I don't understand the need for the self-evaluation or the parental biography. For a questionnaire of this type, they seem rather useless.

Some of the questions asked are far too personal and meaningless.

I don't like Part III starting with #6 through #18. I think it is quite useless.

Very unrealistic questions as to GPA (grade point average), parents jobs, income; we're here, not home. The situation is very different. Don't see where the analogy comes in. On the "do not write your name" business, there are too few people with majors such as mine, GPA as mine, living in rooms such as mine, from towns as small as mine, so I feel it is quite obvious who is who.

It's really quite ridiculous and in places too personal.

Somewhat meaningful. Could be of some help, but some questions are ridiculous (especially questions 26-29).

There were many unnecessary and overly personal questions.

Some of the questions are repetitious. There are too many things to list under areas given on this questionnaire.

Had to repeat myself too many times.

Too much repetition.

I think the above questions are rather repetitive.

It's a little long.

Fairly ambiguous.

S. A. (Student Advisor) wouldn't say why, only some people were chosen to fill out this form and others weren't.

APPENDIX III

IMPROVEMENTS ON RESIDENCE HALL FACILITIES SUGGESTED BY STUDENTS

This is a compilation of the suggestions for improving the residence halls volunteered by the students who answered the questionnaires. It is compiled primarily to gain some insight into the problems and inadequacies of existing facilities; the suggestions also offer some ideas of the real needs and fancies of the students. It is hoped that this compilation can be helpful to the designers and architects.

In order to pinpoint more specifically the problems and needs, the suggestions are grouped according to hall, sex, and areas; the range of suggestions is the criterion. For the more frequently occurring suggestions, please see Tables 10, 11, and 12.

Improvements Suggested by Austin Hall Students

Area	Men	Women
Bedroom		
Size	Larger room sizes Wider rooms Larger singles	Larger rooms
Arrangement	Better room arrangement Variety in rooms More differentiation between rooms; more than just numbers Single rooms too far away from the action More single rooms	Carpeting in halls. Medicine cabinet in each room

Improvements Suggested by Austin Hall Students

Area	Men	Women
Bedroom		
Furnishing	Vary colors of rooms Carpeting in rooms No brick walls	Carpeting in halls and rooms Medicine cabinet in each room
Bed	More bed space	Larger beds Shorter beds in singles
Desk	More desk space Better arrangement of desks Move desk away from window Drawers on both sides of desk Desk away from heater Typewriting shelf	Desks should be away from heater
Chair	Swivel chairs Padded chairs in rooms Comfortable chairs More comfortable furniture	Softer chairs Straighter chairs Plastic chairs removed
Closet		Larger closets More closet space
Book Shelf	More bookshelf space	
Mirror		
Electric Outlets	Outlets in better places More electrical outlets	More electrical outlets
Window	Larger windows Better system to open and windows Better sealing around windows	Larger windows Window screens should not be welded on

Improvements Suggested by Austin Hall Students

Area	Men	Women
Bedroom		
Lighting	Lighting less direct Brighten overhead lighting	
Soundproofing	Better soundproofing	Soundproofing
Heating	Thermostats in rooms Individual heat control Better ventilation arrangement	Heat regulators in each room Thermostat controlled heating
Hallway		
	Better arrangement of hallway Carpet in hallways	Wider halls
Bathroom		
	Cloth towel dispenser Soap and paper towels	Personal bathrooms More than one tub Higher shower heads Soap and towels
Laundry		
	More washers and dryers	One washer and dryer per floor Better ventilation in laundry room Laundry facilities on each floor Ironing boards on each floor
Kitchen		
	Oven in kitchen	Oven in kitchen

Improvements Suggested by Austin Hall Students

Area	Men	Women
Floor Lounge	Lounge less formal, more practical Balcony Bar in lounge Garden area used for lounge Remake pit into lounge area Do away with pit Avoid wasted space	Larger lounge Softer chairs in lounge Balconies on all lounges Re-decorate lounges
Study Room	More study space Blackboards in study area Study lounges with windows to outside Small reference library	Large, central study roo Carpeted study rooms Study area in couples Decorate study rooms Better equipped study rooms Soundproof typing rooms
Recreation Room	More recreation facilities More recreational facilities Better recreational facilities More recreational equipment Better indoor recreation facilities Game area Ping Pong table Gym Pool tables Weight Room Color T.V.	Furnish recreation rooms Fully equipped recreatio room Better recreation facilities Lounge chairs in T.V. ron Drapes in T.V. room Closed circuit T.V. Pool table

Improvements Suggested by Austin Hall Students

Area	Men	Women
Food	Better cafeteria	Commissary
	Improve food service	Snack bar
	Snack bar	More variety in vending machines
	Commissary	Fruit machine
	Food machine	
	Sandwich machine	
	Cigarette machine	
General	Smaller floors	More decoration
	Freshmen on floors by themselves	Better floor arrangements
	More parking lots	Eliminate wasted space in central garden
	A light at Parkway entrance	Double entrance to A Wing 1st floor
	Eliminate echo of breezeway	More required social events
	Better repair service	Better coloring
	Better maid service	
	Quicker mail service	
	Central T.V. lounge	
	Centralized music system	
Special Features	Internal sound system to music and entertainment room	Music practice room
	Speakers for music	Music practice rooms with piano in it
	Music room	Larger hair dryer
	Stero Room	Pay phone on each floor
	Soundproof practice room	Better floor cleaning facilities
	Replace dryers	Vacuum on each floor
	Blackboard	Terrace
	Elevators	Sun deck on roof
	Pencil sharpeners on each floor	T.V. on each floor
		Soundproof exercise room

Improvements Suggested by Ballif Hall Students

Area	Men	Women
Bedroom		
Size	Larger rooms	Rooms should be larger Bigger double rooms
Arrangement	A better use of the space in the rooms More single rooms	Rooms are too square Needs more of the feminine touch Have a better color scheme Rooms should be arranged so they can be changed easily
Furnishing	Better individual room furnishings Throw rugs Carpets in each room Better fitting doors Panel the rooms Wall paper	Rugs in the rooms Piping in the rooms should be covered Cover the walls
Bed		The option of choosing the firmness of the beds
Desk	More space between the desks More drawer space	More distance between the desks More drawer space
Chair	A lounge type chair in each room Padded chairs with lower arm rest	More comfortable chairs Chairs that fit under the desks
Closet	Better closets Increase the closet space	Closet space should be larger Move the shelves out of the closets More closet space

Improvements Suggested by Ballif Hall Students

Area	Men	Women
Bedroom		
Book shelf	More shelf space Darker finish on the shelves Higher shelves More book space	Built in shelves
Mirror	A floor length mirror	Full length mirrors on the doors Better lighting over the mirrors in the rooms
Electrical Outlets	More electrical outlets	More wall plugs per room Better electric outlet arrangement
Window	More windows	
Lighting	Better central lighting in each room Add common light bulbs Movable lamps in each room	Better lighting Have the lamps movable Better overhead lights in the rooms
Soundproofing	Soundproofing	Soundproofing in the rooms
Heating	Humidity control Rooms should be placed so they don't heat up in the afternoon sun Air-conditioning Better ventilation Central heating A better heating system	Air conditioning Some sort of cooling system

Improvements Suggested by Ballif Hall Students

Area	Men	Women
Hallway		
	Increase the width of the hallways	
	Better lighting in the hallway	
	Direct hallway to Ballif A and B	
	Have adjustable lighting in the hallways	
	Panel the walls of the halls	
Bathroom		
	Re-paint the bathroom	Counter space in the bathrooms
	A bathtub	Towel racks
	One large bathroom with only one door	Personal storage areas
		Larger bathroom facilities
		Remove the urinals (men's)
		A more efficient shower curtain
		Soft water
Laundry		
	A better laundry room	Lockers in the laundry room
	More washing machines	More laundry facilities
	More dryers	More washing machines
	More ironing boards	
Kitchen		
	Kitchenettes	Kitchenettes

Improvements Suggested by Ballif Hall Students

Area	Men	Women
Floor Lounge		
	Make the lounges bigger Better lighting in the lounges Better furniture in the lounges	Remodel the lounges Painting in the lounges Draperies in the floor lounges Curtains that people can't see through Wood panel the lounges
Study Room		
	A study lounge for each floor Co-educational study facilities	A study lounge A better location for the study lounges Doors in the study lounges A room for typing late at night
Recreation Room		
	A recreation room with more facilities A pool table Ping-pong table Weight-lifting room Resident hall swimming pool	More facilities in the recreation room An exercise room
Food		
	Better food Room food service Re-decorate the cafeteria A snack bar open after 11:00 Food machines Make the vending machines easier to reach A coffee house	Better food Remodel the cafeteria Keep the Coke machine filled A candy machine

Improvements Suggested by Ballif Hall Students

Area	Men	Women
General		
	Better overall interior decoration	More of a "home type" atmosphere
	Coordinate the colors	Freedom with some supervision
	A better color	Privacy
	The main lounge more centralized	A lighter and brighter color
	T.V.'s in the main lounges	Change the surface of the exterior
	Make the halls and lounges warm	A more inviting main lounge
	More and better landscaping around the dorms	A better arrangement for meeting dates without having to go outside
	Adequate storage facilities	Covered passage to the main lounge
	A more "home like" atmosphere	Design new walks between wings
	More activities for the cold weather	Add a terrace on each floor
		Change the material the floors are made of
Special Features		
	More T.V.'s	A place for coed T.V. viewing
	Color T.V.	Space for projects such as painting
	A garden with a patio	Better equipment for personally cleaning the rooms
	A music room	
	Elevators	A place to store such things as formals and hats
	Pencil sharpeners	Pencil sharpeners
	Drinking fountains on each floor	A drinking fountain
		Typewriters
		A coin operated hair dryer
		Elevators

Improvements Suggested by Van Cott Hall Students

Area	Men	Women
Bedroom		
Size	Larger rooms	Enlarge the rooms Apartments are too small for six girls Four girls, not six More bedroom space
Arrangement	Vary the layouts of the rooms	Better arrangement of apartment Make the rooms easier to rearrange
Furnishings	Furniture in rooms should be movable Paneling in the rooms and halls Carpeting in the rooms A door to the outside in each room More comfortable room furniture Wash basins in each room	Paneling in the rooms Means to hang pictures Make the walls thicker Better looking curtains Carpeting New curtains Phones in every room in the apartments
Bed	Movable beds	Bunk beds Longer bed space A better color for the bedspreads Bedside table
Desk	More drawer space	Larger desk Movable desks Desks too close to the bed Drawers on each side of the desk More drawer space

3

Improvements Suggested by Van Cott Hall Students

Area	Men	Women
Chair	More chairs in the rooms Chairs with arms Softer chairs with cushions	More comfortable chairs Larger chairs Couches for the apartments
Closet		More closet space Real dresser
Book shelf	More shelves Have shelves in the walls	More shelf space
Mirror		Full length mirror Back mirrors
Electric Outlets		More electric outlets
Windows	No seals on the windows Awnings over the windows	Larger windows Tighter sealed windows Curtains should cover the windows
Lighting	Better overhead lighting Make the desk lamps higher	Better lighting in the bedroom Improved lighting Desk lights too close to the bed Not enough lighting Additional floor lamps
Soundproofing	Soundproofing	Soundproofing in rooms Soundproofing on the roof Better acoustics
Heating	Better ventilation in the rooms Separate heat outlets in each room Better air-conditioning Heating system should be self-controlled	Individual heat control Heat regulation A better heating system Air conditioning Air circulators Better ventilation Heat in the study areas

Improvements Suggested by Van Cott Hall Students

Area	Men	Women
Hallway	Soundproof the halls and stairs	Wider hallways Improve stairways
Bathroom	Larger bathrooms Hand dryer in bathroom A towel or hand dryer	Larger bathroom Toilets make too much noise More bathtubs Better water system Correct the water pressure More cabinets in the bathroom Towel racks in the bathroom Real toilet paper More bathroom storage More closet space in bathroom More counter space Better shower curtains Bathrooms in each room Individual sinks in each room
Laundry	More washers and dryers Less cupboards, but more shelves in the laundry room	Better laundry facilities Put the laundry rooms away from the other rooms Another laundry room for each floor

Improvements Suggested by Van Cott Hall Students

Area	Men	Women
Kitchen		Larger kitchen More drawer space in kitchen Better garbage disposal More cupboard space Built-in stove and refrigerator Better tile in kitchens Larger stove Pots and pans in the kitchen Soap, towels, and wash cloths for the kitchen Cooking utensils Fans in the kitchens A large freezer in the refrigerator More burners on the stove
Floor Lounge	Separate the lounges Plants on the floor Add art work to the lounges A few small lounges per floor instead of one large one	Better looking lounges A specific T.V. room on each floor More furniture for living room
Study Room	A better study lounge A study room Private study lounges for late hours	More study rooms Library
Recreation Room	Better Recreation facilities T.V.-Stero for each floor A chalkboard by the pool table	Carpeting in the T.V. rooms Re-furnish the recreation room Games for women in recreation hall Television

Improvements Suggested by Van Cott Hall Students

Area	Men	Women
Food	More vending machines Coffee machines on each floor A bar	Improve the cafeteria Food machines in each wing Cigarette machines Vending machine Coke machine in each wing Coffee shop
General	More of a central location Vary the color Landscape the outside better One larger dorm instead of several small ones Have it possible to have girls on the floor whenever you want A better parking area Storage space	More homey Better use of color Reconstruct the archway The circle outside is too small and makes driving in winter risky The main door should be a double door Garbage pick-up on the weekends Dorm hours should be liberalized
Special Features	An elevator Color T.V. Floor newspaper and magazine Storage for ski equipment More rug cleaners Personally locked mailboxes A card room	Coat closet in hall Dumb waiters for resident's use A place to store things A broom closet More bicycles rack Carpots Sewing machines Pencil sharpeners Drinking fountain More areas to sunbathe Bigger sundecks Swimming pool Additional music practice rooms A piano

APPENDIX IV

LETTER TO STUDENT ADVISORS

April 3, 1967

Dear (First Name)

Victor Hsia (pronounced Shaw), a graduate student in Architectural Psychology is currently preparing a questionnaire to study the reactions of students toward various aspects of the residence hall buildings.

You and a number of students on your floor are selected to answer this questionnaire this weekend.

Please give Victor all the co-operation and assistance you can in answering and handling the questionnaire.

(Signed)

P.S. The questionnaires will be given to you during the next few days. After filling in yours and collecting all others on your floor, please return them to Ballif Main Desk before 5 p.m. Monday. To make it easier for you, remind your students to return the questionnaire to you by Sunday night.

APPENDIX V

RESIDENTS' RATING OF ARCHITECTURAL ELEMENTS IN AUSTIN HALL (ABSTRACT)

In may, 1966, 48 randomly selected men and women residents of Austin Residence Hall at the University of Utah were given a questionnaire to rate 20 architectural elements of the residence hall environment. The residents (S̲s) rated each of the elements on a three-point scale. It was found that the mean score was 40.85. An analysis of variance showed no reliable differences (.05) of rating scores between men and women, floors, and rooms.

Supplementary data were gathered from the questionnaire. The most annoying feature in Austin Hall was the heater in students' rooms; 50 percent of S̲s complained about it. Other major annoying features were windows and the open-court, respectively receiving complaints from 44 to 40 percent of the S̲s. It was also found that S̲s spent an average of 57 percent of their studying time in dormitory rooms, and that men spent 62 percent while women spent only 49 percent of their studying time in their rooms.

APPENDIX VI

COMMUNALITY SCORES FOR 24 ELEMENTS OF RESIDENCE HALL ENVIRONMENT

Elements		Communality Scores
Bedroom Area	Room Size	.63
	Closet Space	.64
	Study Space	.61
	Window Size	.78
	Arrangement	.64
Furnishings:	Bedroom	.65
	Floor Lounge	.70
	Main Lounge	.75
Soundproofing:	Bedroom	.83
	Hallway	.84
Lounges:	Arrangement	.83
	Space Usage	.76
Open Court		.80
Recreation Room		.71
Bathroom		.66
Laundry Room		.65
Color		.63
Floor Layout		.67
Architectural Design		.75
Location		.64
Heating System		.64
Lighting System		.66
Food Service		.63
Overall Rating		.78

APPENDIX VII

Analysis of Variance for the General Ratings of 24 Architectural Elements in Residence Halls Using Hierarchal Design (Nested Factors)[a]

Source of Variation	df	SS	MS	F
Between Halls	2	14,048	7,024	32.53**
Between Wings Within Halls	6	632	105	0.48
Between Students	243	52,469	216	
Total	251	67,149		

**Significant at .01 level.

[a] Based on the first 28 ratings of each column of Table 7. Ratings below the twenty-eighth were excluded to equalize _n_ s.

VITA

Name	Victor Wei-teh Hsia
Birthplace	China
Birthdate	June 25, 1939
Education	B.A. Design, June 1963, University of California at Los Angeles M.A. Industrial Design, June 1965, University of California at Los Angeles M.S. Architectural Psychology, June 1968, University of Utah
Professional Background	Behavioral Research Institute, Graphics consultant. Designing and building of General Aptitude Test Battery (graphic tests) for U.S. Department of Labor, February 1967 to present. Economic Research Associates, Art Director. Responsible for originating and co-ordinating all graphic work between Research and Publication Department. Tasks also involved assisting researchers in design and interpreting clients' requirements. September 1963 to September 1965. Planning Research Corporation. Technical Assistant. Interpreting and translating research findings into presentation graphics. November 1962 to June 1963.
Summer and Part-Time Employment	Space Utilization Analysis, Incorporated, Designer. Governmental and commercial building interior planning and detailing. June 1964 to November 1964. I.M. Gainsburg Furniture Company, Designer-draftsman furniture design. August 1962 to December 1962. Eddington Architectural Model, Incorporated, Model maker. Scale architectural model building. April 1962 to August 1962.

Awards	National Student Design Merit Award, Aluminum Company of America, 1963. Dean's Honor Student, College of Fine Arts, UCLA, 1963 Temple Foundation Art Student Award, 1963
Publication/Report	"Monorail System for UCLA" Daily Bruin, UCLA, 1963 "A Survey of Industrial Design Profession in Southern California," Graduate seminar report, UCLA, 1964 "Residence Hall Environment: An Architectural Psychology Comparative Study," University of Utah, 1967 Associate Editor, Architectural Psychology Newsletter.
Personal Data	U.S. Citizen. Single. U.S. Air Force "Secret" clearance.